

# THE AMERICAN PERFUMER

AND

## ESSENTIAL OIL REVIEW

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#### EDITORIAL NOTICE

WE invite correspondence and special articles upon subjects of  
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ICAN PERFUMER and ESSENTIAL OIL REVIEW is the OPEN  
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#### CONTENTS

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#### EDITORIAL:

A Cancerous Evil	201
Tariff News	202
Resolutions in Memoriam	202
Advertising	203
Treasury Decisions	203
Use and Abuse of Synthetics	204
Determination of Citral in Lemon Extracts and Lemon Oil	205
Pharmacopoeial Tests for Essential Oils Discussed	207
Who Makes the Adulterator?	210
Citronella Oil	211
Essential Oils in the White Cross Congress	212
Book Review	214
Lemon Oil: The Finest Question	214
Trade Notes	216
New Incorporations	219
Pure Food and Drug Notes	220
Trade Mark for Registration in Our Bureau	221
Patents and Trade Marks	222
Foreign Correspondence and Market Report	224

#### A CANCEROUS EVIL.

This issue has resolved itself very largely into a sym-  
posium on adulteration and a plea for its suppression.  
There is no subject nearer to our heart than this, and we  
shall do all we can to present the testimony of experts  
in specific form, and their conclusions as well, in order  
to hasten the approach of that happy day when not only  
the word pure will have some significance in the essential  
oil trade, but when its use will be unnecessary.

The entire question is not typical of this industry alone,  
for in every branch of commerce the personal equation  
enters so largely into the foundation of business dealings  
that the essence of the problem is simply this, "Is the man  
who offers me this article telling the truth in regard to its  
quality?"

We have thus to deal with a fundamental question of  
morality, and the only hope for relief while we await pa-  
tiently the arrival of the millenium is to lay down a strict  
set of standards and hold everyone to an observance of  
them.

Here arises a complication; much the same in character  
as that produced by difference of opinion of physicians at  
a sickbed. The old adage has it, "When doctors disagree  
the patient dies," though some pass away entirely without  
medical assistance!

At the present time chemists the world over are trying  
to arrive at some agreement in standards for essential oils,  
and while *opinions* differ shall the user succumb to the at-  
tacks of that germ of disease, the adulterator? Unfor-  
tunately in the cases of some oils there is no certainty con-  
cerning the whole of the constituents, but there is sufficient  
agreement among authorities to permit the fixing of  
definite standards within reasonable variations, and than  
this there is no more important problem in this field.

Lemon oil has long been a bugbear largely because of  
inaccurate or inadequate methods for the determination of  
citral. Until a comparatively short time ago it was sup-  
posed that lemon oil contained about 7% citral, but now

4% in the percentage agreed upon. The difficulty now lies in a proper discrimination between citral and other aldehydes, and if the Hiltner method will solve the doubt its author will receive the plaudits of the trade the world over.

As we go to press we learn that one of the leading pressers of bergamot oil is on his way to London, and by this time will have reached there, with a consignment of bergamot fruits and a pressing machine.

On account of the present gross adulteration of bergamot oil, he is going to press the fruits in the presence of representative perfumers and druggists, and hand them sealed samples as standards.

It has been arranged that Mr. Ernest J. Parry shall be present at the pressing and shall report fully upon the character of the oil produced. Mr. John C. Umney, who is also an expert on this oil, will also be present as a representative of the official drug trade of London.

#### TARIFF NEWS.

This journal was the first to point out certain intentional or unintentional "jokers" in the present tariff act, and we have followed very closely the difficulties arising therefrom.

The paragraphs that have caused more trouble than any other, insofar as raw materials are concerned, are Nos. 3 and 21. We have published timely articles on the status of orange oil and of chemical compounds and derivatives in the manufacture of which alcohol may be, or is, used, such as thymol, heliotropin, artificial musk, etc.

The end of these troubles is in sight, for a decision on orange oil will probably be rendered before February 1 by the Board of General Appraisers, due to our stimulating correspondence with the Treasury Department, and it is the general opinion that the eventual rate will be 25%.

According to statements that have been made to us by those who would profit by the \$1 rate, *i. e.*, makers of orange oil from oranges grown in this country, the infant industry will die of malnutrition if the low rate is upheld.

In the case of thymol, the Treasury Department has ruled in one case that the evidence presented is sufficient to show that no alcohol was used in the manufacturing process, and the shipment now in bond will be released at the 25% rate, instead of 55 cents per pound. This decision is not a blanket one, or in other words, each importation will be separately decided, and a suitable affidavit from the manufacturers will have to be presented with the consular invoice. This applies as well to other products of a like nature.

Under the heading "Treasury Decisions" on another page we publish an official notice regarding the duty on copper, tin and other containers for essential oils, pomades, etc. While this may come as news to some, those who have done more than cursorily to read the tariff act will not be surprised.

#### RESOLUTIONS IN MEMORIAM.

The Executive Board of the Manufacturing Perfumers' Association of the United States, at a meeting held in New York December 2, 1909, directed that the President and Secretary prepare resolutions referring to the death of our fellow member, counselor and friend,

##### Mr. Adolph Spiehler

and further to record the same among the minutes of the Association.

*Whereas*, Our Heavenly Father in His wisdom has seen fit to take from us our late member, Mr. Adolph Spiehler,

The Executive Board of the Manufacturing Perfumers' Association directed that a minute be placed on the records expressing our sorrow at his death and our appreciation of his many kindly qualities of heart and manner.

His connection with the Association covered a period dating from its organization and was marked by loyal zeal and service. He was a sturdy advocate of correct practices; a loving husband and father, devoted to the advancement and welfare of his children who succeed him in the business.

*Resolved*, That this tribute of our love and esteem be entered on our records and that with deep and abiding sympathy of this Board a copy of same be forwarded to the family of Mr. Spiehler.

(Signed) President J. CLIFTON BUCK.

Secretary WALTER T. HATHAWAY.

[Seal.]

The Executive Board of the Manufacturing Perfumers' Association of the United States, assembled in special meeting in the City of New York this second day of December, 1909, adopt the following minutes on behalf of our Association in commemoration of the death of our beloved fellow member

##### Mahlon N. Kline.

*Whereas*, Our Heavenly Father in His inscrutable wisdom has seen fit to call from our midst our friend and fellow member Mahlon N. Kline, whose sudden death occurred on the twenty-seventh day of November, and

*Whereas*, We have been deeply impressed with the lessons taught by his life; in the complexity of the many problems that confronted him, his heart seemed ever to say, "Do the duty that lies nearest thee, the next is already clearer," and in this way he lived and accomplished each day some new thing for his business associates, for his friends and for his Master. He was never forgetful of the high calling of man; his life was kept perennially sweet and noble through work and service; and we feel ourselves blessed to have counted so many years in fellowship with one continually vigilant and whose actions were so full of loyalty and characteristic purpose.

*Resolved*, Therefore, that this tribute of our love and esteem be entered upon our records, and that with the deep and abiding sympathy of this Board, a copy of the same be forwarded to the family of Mr. Kline.

(Signed) President J. CLINTON BUCK.

Secretary WALTER T. HATHAWAY.

[Seal.]

## ADVERTISING.

No modern manufacturer ignores the value of advertising as an important link in his selling campaign. "Opinions" differ as to the method to be used, though experienced men, and others that have made a careful study of the silent salesman understand that advertising is like a three-legged stool. This homely example has often served to make the matter clear in this wise. Let the legs represent the cardinal principles involved, viz.: the *goods*, the *medium*, and the *copy*. It is granted by everyone that unless the goods are *right*, continued success should not be hoped for, and assuming therefore that the article for sale is of suitable manufacture and price, there remain the selection of the medium for reaching prospective buyers, and the "*copy*." By the latter we mean the advertisement itself, whether in the form of a booklet, circular letter, magazine, etc. Much depends on copy. It represents, or should represent, the very essence of all the virtues possessed by the article on sale set forth in a manner that will accomplish three objects, namely to *attract*, *interest* and *convince*. Should it fail to attract attention it will, of course, receive none; should it fail to *hold* the reader's attention it will be due to the fault of the advertiser who has failed to present the arguments in an interesting style; and should the advertisement fail to *convince* the prospective purchaser, all other efforts will have been exerted in vain. These are the cardinal principles of every advertisement.

Now, what is the purpose of this elementary exposition of principles?

For the past six months we have kept close watch of the advertising done in the leading weeklies and monthlies by *American* manufacturers of perfumes, soaps and miscellaneous toilet preparations. There is, of course, considerable advertising done in other ways, but periodicals of general circulation, other than the newspapers, are a fair guide to the amount of publicity these articles receive. Our observations have covered 12 magazines from July to November, inclusive, and the total amount of advertising space used was 3,223 single-column inches, divided as follows: Perfumes, 87; talcum powder, 289; soaps, 1,693; hair tonics, 206; and miscellaneous, 948. The percentages are: perfumes, 2.7%; talcum, 8.9%; soaps, 52.5%; hair tonics, 6.4%; and miscellaneous, 29.5%. On a basis of an average cost of \$35 per inch, the total cost amounts to \$112,805, of which \$3,043.74 was devoted to perfumes.

What a paltry amount for general publicity compared to the value of goods included in bonuses, special discounts and other sales *attractions*! When will perfume manufacturers learn the lesson that to insure sales to dealers a general demand must be created by advertising?

The problem of marketing goods is a big one, and in order that perfume manufacturers may be guided along the modern path of publicity we have arranged with competent observers and writers to analyse the situation and

present their views. These will be based largely on the successful campaigns waged by concerns that have built up a good business from small beginnings; for surely there is no better proof of the efficiency of their modern methods than is furnished by their very examples.

## TREASURY DECISIONS.

On December 14, 1909, the United States Circuit Court of Appeals, Second Circuit, Judges Lacombe, Ward and Noyes, rendered a decision in the case of the United States *v.* Anderson (P. E. Anderson & Co., New York), reversing the decision of the Circuit Court on a question involving the classification of precipitated chalk under the tariff act of 1897. This decision upholds the contention of the collector of New York, who ruled that precipitated chalk was dutiable at one cent per pound. The court held that precipitation cannot be regarded as partial manufacture for toilet purposes, and that to be so regarded there would have to be admixture of flavoring or other ingredients.

In view of the fact that the present law (paragraph 13) is substantially the same as the Dingley law in respect of chalk, this decision may be regarded as fixing the status of precipitated chalk.

T. D. 30229.

*Cylindrical or tubular tanks or vessels.*

The provision in paragraph 151, tariff act of 1909, for cylindrical or tubular tanks or vessels, not limited to vessels composed of iron or steel exclusively, but includes those composed of copper or other metal.

TREASURY DEPARTMENT, Dec. 29, 1909.

Sir—The Department is in receipt of your letter of the 16th inst., requesting to be advised whether the provision in paragraph 151 of the tariff act of Aug. 5, 1909, providing for a rate of duty of 30 per cent. ad valorem on "cylindrical or tubular tanks or vessels for holding gas, liquids or other material, whether full or empty," is to be limited to tanks or vessels composed of iron or steel. You state that copper drums are imported at your port filled with lemon oil and other merchandise.

In reply, I have to advise you that in the opinion of this Department the provision in paragraph 151 for cylindrical or tubular tanks or vessels is not limited to vessels composed of iron or steel exclusively, but includes those composed of copper or other metal.

The Department is therefore of the opinion that the copper drums referred to should be assessed with duty at the rate of 30 per cent. ad valorem under paragraph 151.

Respectfully,

JAMES F. CURTIS,  
Assistant Secretary.

(67724.)

COLLECTOR OF CUSTOMS, New York, N. Y.

One of our correspondents wrote us recently, saying: "Any American perfumer who does not take *THE AMERICAN PERFUMER*, is no American perfumer!"



# USE AND ABUSE OF SYNTHETICS

By GEORGE F. MERRELL,  
Of The Allen B. Wrisley Co., Chicago.

Only a comparatively few years ago there were many of our best perfumers who openly scoffed at the new artificial or "synthetic" products for use in perfumery. Today any one of them who should chance to voice such sentiments would find it extremely difficult to obtain a situation, even with a new house. It is undeniably true that the great advances which exact chemical science has made possible in the manufacture of synthetic perfumery material has given the perfumery trade a tremendous impetus in this country and abroad.

One of the principal reasons for this phenomenal growth is the fact that the perfumer of today who has kept in touch with the constantly new and increasing discoveries in the field of synthetic production is enabled by their intelligent use to create new and striking odors of peculiar sweetness and lasting power, and it is a well-known fact that novelties of this sort have had a tremendous sale both here and abroad in late years. This is strikingly instanced by the great and instant popularity of a certain odor resembling clover blossom marketed by a French house several years ago, and which still retains its popularity. The sales on this perfume were so huge, as to be almost beyond belief and the odor was, of course, used in a line of toilet waters, face powders, sachets and other kindred preparations by this astute firm. The net result of this successful creation was the establishment on a firm basis in America of a hitherto unknown firm, who have naturally succeeded in introducing their complete line into this trade and have added one more to the already long list of successful foreign competitors for the American perfume trade—and all through the intelligent use and blending of a certain synthetic which made possible the production of an entirely novel odor.

It seems to me there is a lesson of peculiar significance to the American perfumer to be drawn from the above instance (which, by the way, is only one of many), namely the sure reward which follows the creation of *one* new and striking odor, which if properly marketed—the rest of your line will take care of itself if you have one successful novelty.

Another feature of prime importance is the fact that we can not only produce new and hitherto unknown odors, but can so improve our natural standard odors such as Rose, Violet, Lilac, etc., by the use of these chemical derivatives as to make them far superior to former products in character and lasting qualities. For instance, before the discovery of ionone and certain other chemical products, it was not possible to produce a violet perfume with the true odor of the flower, which had any lasting qualities. Now, by the proper combination of these bodies with the natural product, an exact reproduction of the violet odor is possible, which will last as long as any other odor.

Take, as another trite example, the odor of the rose: It is a well-known fact that neither the French rose in the form of pomades or concretes, nor the Turkish rose,



in the form of otto, will produce a result or effect which is similar to or identical with the odor of our American roses. There has always been something lacking—a certain "green" effect as well as sweetness. The reason for this is that our American rose contains certain esters which are lacking in the French and Turkish flowers. The production of jacinthe provided the "green" odor and a lately discovered method of extracting the lacking "esters" from a comparatively cheap oil has made possible the production of a perfect rose perfume far excelling in richness and naturalism anything possible to

produce before the advent of chemical science into the field of perfumery. And so it is with the rest of the standard odors—the last one to be perfected being Lily of the Valley, which in consequence is having a tremendous run at the present time.

In experimenting with and using synthetic products, care should be taken to distinguish between *true* synthetics and the many deceitful *mixtures* with which the market is flooded. So-called synthetic products may be divided into three classes, viz.:

1. True synthetics.
2. True chemical derivatives.
3. Synthetic compounds.

No. 1 is as the name implies, an artificially *built-up* essential oil. For example, let us take artificial oil of jasmin. We find by exact chemical analysis that natural jasmin contains certain higher alcohols and esters and that one of its principal ingredients is benzyl-acetate.

We find that the cheapest product from which benzyl-acetate may be made is benz-aldehyde or artificial oil of bitter almonds. Another ingredient is benzyl-alcohol which is made in turn from benzyl-acetate. Then come methyl-anthranilate made from anthranilic acid and indol made from indigo, and so on through quite a list of ingredients. These are now combined in their proper proportions and we have a jasmin which for many purposes will compare very favorably with the natural. This then is a true synthetic.

No. 2. True chemical derivative is illustrated by the wonderful and useful product known as ionone which is not a synthetic in the true sense of the word, but a chemical derivative. Another good example of this class is octyl alcohol, which is made from castor oil. After passing through many chemical operations we have as a result an oil of an exceedingly sweet and powerful odor which is, in fact, one of the active principles of tuberose and which has been found very useful.

No. 3. Synthetic compounds. There are so many of these compounds on the market that the class to which they belong is readily recognizable. Anyone with a slight knowledge of perfume manufacture can combine certain true synthetics and chemical derivatives with some natural products and call the resulting mess a pure synthetic Rose, Lily, etc.



It seems to the writer, however, to be beneath the dignity of a practical perfumer of any ability to use these frauds, nevertheless, their manufacture and sale is steadily increasing and constitute a menace of no mean proportion to the proper development of American perfume manufacture, for the reason that any small druggist or retail merchant who, naturally would buy perfumes from the legitimate manufacturer, can, by the use of these mixtures in conjunction with the "compounds" which are so extensively advertised, produce with little effort a concoction called perfume which, having no merits, hurts the reputation of American perfumes thus dealing a double blow to the legitimate industry.

In closing let me suggest the necessity for caution in the blending of synthetics in perfumes. There are certain combinations which should never be used for the reason that they will set up a slow chemical reaction, which will eventually ruin the finest perfume. Thus, before marketing a new "creation," it is always wise to let it stand for several months, meanwhile carefully observing its progress in ageing and watching for the subtle changes which take place if the wrong combinations have been used. Let us buy only straight synthetics and chemical derivatives, avoiding for our own sakes and the sake of the development of our industry all fake concoctions and compounds. And let us remember that the use of synthetics may be *overdone* as well as *underdone*. The proper combination of synthetics with the natural products is the secret of success for us all.

#### A METHOD FOR THE DETERMINATION OF CITRAL IN LEMON EXTRACTS AND LEMON OILS.

By R. S. HILTNER, DENVER, COLO.

Bureau of Chemistry, U. S. Dept. of Agr.

The method proposed by Chace for determining citral in lemon oils and extracts has been adopted almost universally by food and drug chemists. It has afforded a valuable means of detecting spurious and adulterated products. Experience has shown that for accuracy the method leaves little to be desired. It is applicable, with slight modifications, to all grades of commercial extracts giving uniformly reliable results. Other methods have been proposed for the estimation of citral, but, according to Chace and Gildemeister and Hoffman, all have failed because of insufficient accuracy.

By the method to be described in the following paragraphs, the author has sought to eliminate certain difficulties encountered in the various other methods. The reagent used, although active with other aldehydes, is much more selective of citral than other reagents that have hitherto been suggested, and reacts negatively with aldehydes, other than citral, commonly present in commercial lemon extracts and oils. Its action, moreover, is quite independent of temperature and time. The proposed method is colorimetric in principle, making use of a dilute alcoholic solution of metaphenylene diamine hydrochloride as the reagent. This substance reacts quickly with citral at room temperature, yielding a clear, yellow-colored solution, the intensity of color being proportional to the amount of citral present. The color produced is reasonably permanent. The details of the method, as at present developed, are as follows:

#### REAGENTS.

*Metaphenylene Diamine Hydrochloride Solution.*—Prepare a 1 per cent. solution of metaphenylene diamine hydrochloride in 50 per cent. ethyl alcohol. Decolorize by shaking with fuller's earth, or animal charcoal, or filter. The solution should be bright and clear, free from suspended matter and practically colorless. It is well to prepare only enough solution for the day's work, as it darkens on standing. The color may be removed from old solutions by shaking again with fuller's earth or animal charcoal.

*Standard Citral Solution.*—Dissolve 0.250 gram of C. P. citral in 50 per cent. ethyl alcohol and make up the solution to 250 cc.

*Alcohol.*—For the analysis of lemon extracts, 90 to 95 per cent. alcohol should be used, but for terpenless extracts alcohol of 50 to 60 per cent. strength is sufficient. Filter to remove any suspended matter. The alcohol need not be purified from aldehyde. If not colorless, render slightly alkaline with sodium hydroxide and distil.

#### APPARATUS.

Any convenient form of colorimeter may be used. The writer has obtained concordant and satisfactory results with the use of a form of colorimeter designed by Oswald Schreiner and prefers this form. By lining the inner tubes with unglazed, opaque, black paper, so as to eliminate side lights, and leaving only the discs of light at the bottom of the tubes visible, much closer comparisons may be drawn. Good results were secured also with Eggertz tubes. With this latter apparatus alcohol is added, small quantities at a time, to the stronger colored solution until, after shaking and viewing transversely, the colors in the two tubes are exactly matched. Calculations are then made by establishing a proportion between the volume of samples taken and the final dilutions.

#### MANIPULATION.

All of the operations may be carried on at room temperature. When it is desired to determine citral by weight in the sample, weigh into a 50 cc. graduated flask, 25 grams of the extract and make up to the mark with alcohol (90 to 95 per cent.); stopper the flask and mix the contents thoroughly. Assuming the use of a Schreiner colorimeter, pipette into the colorimeter tube 2 cc. of the above solution, add 10 cc. of metaphenylene diamine hydrochloride reagent and complete the volume to 50 cc. (or other standard volume) with alcohol. Compare, at once, the color with that of the standard, which should be prepared at the same time, using 2 cc. of standard citral solution and 10 cc. of the metaphenylene diamine reagent, and making up to the standard volume with alcohol. From the result of this first determination calculate the amount of standard citral solution that should be used in order to give approximately the same citral strength of the sample under examination, then repeat the determination. Make several readings, which should agree closely, and from the average, or the totals, calculate the amount of citral in the sample. In the case of samples colored with naphthol yellow S, or martius yellow, add a drop of concentrated hydrochloric acid to both sample and standard before adding the metaphenylene diamine reagent. Unless very strongly dyed, the effect of the coloring matter is inappreciable. When the amount of citral in the sample is small (less than 0.1 per cent.) it is well to take a larger aliquot portion of the sample, rather than to take a correspond-

ingly smaller amount of the standard solution, in order to produce a strong yellow, necessary for accurate comparisons.

Citral in lemon oil may be determined with some degree of accuracy, in a similar manner, by first making an "extract." Five to eight grams in 100 cc. of alcohol is a convenient strength to use. The same difficulty obtains here, of course, as with the fuchsin-sulphurous acid method, namely, as stated by Chace that "the error made in comparing the solution and standard becomes so great when multiplied to correct for the dilution that it somewhat impairs the usefulness of the method for oils." However, it is safe to say that the results obtained are accurate within 0.2 or 0.3 per cent.

A number of experiments have shown that at room temperature the metaphenylene diamine hydrochloric reagent produces no color reaction with small amounts of acetaldehyde. It is therefore unnecessary to use aldehyde-free alcohol. The small quantity of acetaldehyde commonly present in rectified commercial alcohol is not visibly affected by the reagent. The maximum intensity of the color reaction with citral seems to be developed immediately and therefore observations may be made at once. The color normally is quite permanent and hence considerable latitude in time is allowable. Observations made immediately and again after half hour standing at room temperature gave practically the same results.

In the case of commercial terpeneless extracts, the yellow color develops to its full extent at once and holds without change for thirty minutes or more. The same is usually true of ordinary extracts containing lemon oil terpenes. Rarely, the yellow color at first produced gradually changes to a yellowish green tint. In this latter case, therefore, it is necessary to make the comparisons of color immediately after adding the reagents. In the course of the year's work in this laboratory, out of a large number of samples examined, only one sample of lemon oil and three of commercial lemon extracts (all purported to be pure products) gave this abnormal color, that is, a yellowish green tint instead of the characteristic yellow. In these four cases, and with the sample of citronellal mentioned below, the colors produced, which varied from yellowish green to greenish blue, are now believed to be due to the blending of the yellow tint from citral with the blue produced by the impurity common to all, probably partly oxidized limonene. This subject is being investigated. Obviously, the citral in such abnormal products cannot be accurately determined by the foregoing method. Quite recently, it was observed that when oil of lemon or oil of orange was allowed to stand exposed to the air for a few days, a greenish yellow color was produced on the addition of the metaphenylene diamine reagent and alcohol; the longer the exposure the darker and more bluish was the color yielded. From this it is inferred that in the few abnormal cases noted the lemon oil had become in part changed by oxidation. Apparently, the terpenes only undergo change, since no terpeneless extracts examined gave any abnormal color. It is obvious, too, from the foregoing that alcohol in the extracts prevents the oxidation. Extracts that are properly made from pure fresh oil, direct from the coppers, conditions that usually obtain, may easily be examined for citral by this method.

Other normal constituents of lemon oil seem to be unaffected by metaphenylene diamine hydrochloride. Dilute solutions of citronellal in alcohol yield no color when

treated with the reagent, except after standing at least thirty minutes. It was noted that slowly a slight blue or greenish tint developed. From recent experiments it is believed that this final color was due to impurities, terpenes probably, in the citronellal used. The sample was labeled "pure citronellal." It was not tested further to determine its quality.

The effect of the reagent on limonene has not yet been fully determined. Most of the samples of lemon oil tested gave the normal yellow color that was permanent and identical with that produced with pure terpeneless citral solution and correct in intensity for the amount of citral present. Since limonene is present in lemon oil to the extent of about 90 per cent., it is therefore reasonable to infer that it does not react with metaphenylene diamine hydrochloride, or at least does not produce a distinctive color. However, the only sample of limonene obtainable, when dissolved in alcohol and tested with the reagent, produced a strong, clear, indigo-blue color. Here again partial oxidation may account for this abnormal color. The same result was obtained after redistilling the sample. This sample was procured from a very reliable firm and was labeled "pure limonene." It is interesting to note that under the same conditions ordinary American turpentine, in dilute solution in alcohol, gives the same blue color.

The degree of accuracy of the method is indicated in Table I. Weighed amounts of pure citral were dissolved in 50 per cent. alcohol and tested by the process described. The tests were made under varying conditions of temperature and time of standing after addition of the reagent, using in some cases aldehyde-free alcohol and in others ordinary commercial "rectified spirit" as the diluent.

TABLE I.

Gram citral per 100 cc.

No.	Used.	Found.	Difference.
1.....	0.0800	0.0849	+0.0049
2.....	0.0666	0.0700	+0.0034
3.....	0.0500	0.0500	0.0000
4.....	0.1000	0.0990	-0.0010
5.....	0.0956	0.0946	-0.0010
6.....	0.0500	0.0500	0.0000
7.....	0.1200	0.1170	-0.0030
8.....	0.0610	0.0610	0.0000
9.....	0.2000	0.1970	-0.0030
10.....	0.0250	0.0243	-0.0007
11.....	0.0250	0.0246	-0.0004
12.....	0.2025	0.2044	+0.0019

Table II shows results of tests of commercial extracts by Chace's method and by the one here proposed.

It is apparent in the following table that fuchsin-sulphurous acid tends to give slightly higher value for citral than metaphenylene diamine. This is believed to be due to the positive reaction of the former reagent with acetaldehyde and citronallal, which are probably always present in minute quantity in commercial extracts and which give no color reaction with the latter reagent. Samples Nos. 5, 8 and 9 show slightly less citral by fuchsin than by the other reagent. The significance of this is not clear. It is at least possible that the discrepancy is due to experimental error.

TABLE II.

Gram citral per 100 cc.

No. of sample.	Kind of extract.	By meta-	
		By fuchsin sulphurous acid.	phenylene diamine hydrochloride.
1	Terpeneless .....	0.100	0.098
2	" .....	0.059	0.056
3	" .....	0.117	0.098
4	" .....	0.117	0.093
5	" .....	0.072	0.079
6	8.4 per cent. lemon oil..	0.270	0.264
7	Terpeneless .....	0.074	0.064
8	Made from lemon oil and lemon grass oil, yellow dye.....	0.016	0.019
9	Terpeneless .....	0.045	0.053
10	5.25 per cent. lemon oil.	0.326	0.252
11	Terpeneless with citral from lemon grass oil.	0.313	0.305
12	Terpeneless .....	0.137	0.117
13	" .....	0.078	0.061
14	" .....	0.096	0.088
15	" .....	0.088	0.086

In order to ascertain how nearly uniform the results would be by different operators, the same samples of commercial extracts were submitted to three analysts in this laboratory. The results are given in Table III, expressed as percentage of citral.

TABLE III.

Sample No.

Analyst.	1	2	3	4	5	6	7
A. E. Leach...	0.060	0.102	0.032	0.388	....	....	....
F. H. Wise....	0.097	0.060	0.100	0.030	....	0.098	0.080
R. S. Hiltner..	0.098	0.056	0.098	0.040	0.344	0.093	0.079

In brief, the apparent advantages of the method are, first, that all operations may be carried on at room temperature and the tests may be made immediately after adding the reagent. Second, it is unnecessary to use especially purified alcohol, free from aldehyde. Third, more nearly correct results for citral may be secured in the analysis of commercial extracts, since the reagent used acts negatively with acetaldehyde and citronellal, usually present in small quantity in such products.

The author wishes to acknowledge his indebtedness to Mr. Albert E. Leach for his kind assistance and helpful suggestions in this work.—*Journal of Eng. and Ind. Chem.*

**SAPONACEOUS NEUTRAL PASTE AND PROCESS FOR THE MANUFACTURE THEREOF.**—Soc. Nauton Frères et de Marsac and T. F. Tesse, Paris. Eng. Pat. 9441, April 21, 1909. Under Int. Conv., March 10, 1909.

An alkali sulphonate of castor oil is incorporated with an ordinary soap containing excess of alkali, to form a neutral paste with strong detergent properties. This paste may also contain an addition of a chlorinated hydrocarbon (preferably a chlorine derivative of ethylene or ethane) which has been rendered soluble or miscible with water by treatment with a sulphonated oil at a temperature near the boiling point of the chlorinated hydrocarbon.

## PHARMACOPOEIAL TESTS FOR VOLATILE OILS DISCUSSED.

The special feature of the regular monthly meeting of the New York Branch of the American Pharmaceutical Association held at the College of Pharmacy on Monday evening, January 10, was a paper on the "Volatile Oils of the United States Pharmacopoeia," by Paul Jeancard and Conrad Satie, of Jeancard Fils & Co., Cannes, France, an English translation of which was read by Mr. Caswell A. Mayo, editor of the *American Druggist*. We present on another page the first installment of this paper which we intend to print in full.

As will be seen the paper discusses first of all the general analytical methods of the Pharmacopoeia and then takes up in detail the criticism of the descriptions and tests of the individual oils.

The discussion of the paper was opened by Dr. Clemens Kleber, of Fritzsche Bros., who said that it was desirable for the Pharmacopoeia to prescribe very narrow limits for all oils used in medicine. It was wrong, however, for the laws to make it necessary to brand as impure the volatile oils of undoubted purity which nevertheless failed to conform to the pharmacopoeial requirements and might therefore not be suitable for medicinal use. The producer and the consumer were well aware of the fact that there was a wide variation in the qualities of essential oils due to differences in the climatic conditions under which they are produced. It was most unfair to brand as impure such oils as were really pure, even though they failed to conform to pharmacopoeial requirements. The authors propose the substitution of 15 degrees C. for the temperature of 25 degrees C., which is now prescribed in the United States Pharmacopoeia as the temperature at which the physical properties of the oils are to be determined. Dr. Kleber objected to this change saying that the temperature of 25 degrees C. was decidedly preferable. The temperature of 15 degrees C. was below that ordinarily found in the working laboratory and it would therefore generally be necessary to cool off the oil before taking the specific gravity. This was much more difficult a process than warming them to 25 degrees. Moreover on the Atlantic seaboard and under average conditions there is frequently a precipitation of moisture on the outside of any vessel having a temperature of even 20 degrees, and this precipitation is quite sufficient to affect the accuracy of observations. No such trouble is experienced in taking the specific gravity at 25 degrees C. The oils of anise and of rose moreover are solid at 15 degrees C. and it is therefore impracticable to take specific gravity at that temperature. Finally it has become customary among analysts to make observations as to other physical qualities, such, for instance, as electrical conductivity at 25 degrees C. Therefore, there was, in Dr. Kleber's opinion, no advantage to be gained by the change in the temperature at which the specific gravity is taken.



Dr. Kleber agreed with the authors that organic chemistry does not yet afford any means of determining with precision the chemical constituents of essential oils. This is true of the method proposed by Scammel for the estimation of cineol by means of phosphoric acid and also of the method so far proposed for citral and carvone and pulegone. As a matter of fact Dr. Kleber did not consider the estimation of citral as of very great importance in determining the purity of the sample since a variation of 10 per cent. in citral content had no special significance unless indeed it sunk below 4 per cent., and such a variation might be readily introduced by the addition of 10 per cent. of turpentine oil.

Dr. H. E. Seil, of the New York Laboratory of the United States Department of Agriculture, who is charged with the analysis of oils offered for importation, said that the government officials were compelled to construe literally the requirements of the Pharmacopoeia in so far as they applied to oils intended for medicinal use. The oils which were labeled "for technical use" only were admitted without question. It was much to be feared, however, that some of these oils after being admitted lost the "for technical use" label and made their way into commerce without any such qualifying label, thus being used either as drugs or food. He said that the Pharmacopoeia should be rather more rigid than it now is as to the presence of heavy metals, for it not infrequently happens that quite an appreciable quantity of lead was discovered in cassia oil, for instance.

Mr. C. O. Dodge, of the Washington staff, who had studied the citral content of lemon oil in conjunction with Mr. E. M. Chace, who had been sent by the Department of Agriculture to Messina, said that none of the published methods for the determination of citral had been found reliable. Those depending on color reaction developed a color so gradually that it was impossible to tell the beginning and end of the reaction. Those which depend upon the solubility in bisulphite solution fail to show a clearly defined meniscus. Mr. Chace had, however, devised a modification of the citral test which gave fairly concordant results. This test applied to 130 specimens of undoubted authenticity showed that the citral content varied between 4 per cent. and 7 per cent., with an average of 5.25 per cent. Where the citral content sank below this figure it was desirable to examine carefully the other properties of the oil. It will be remembered that Mr. Chace spent some time in Messina and had the 130 samples of volatile oil of lemon made under his immediate personal supervisions and under such conditions as to preclude the possibility of sophistication. A study of these authentic specimens were being carried out with a view to establishing reliable constants. [In connection with this we invite special attention to the newly revised method of citral analysis by Hiltner, and Parry's comments on Mr. Chace's lemon oil report, both of which are published in this issue.—Ed.]

The chairman, Mr. Jacob Diner, invited Mr. William G. Ungerer to participate in the discussion stating that the presentation of the paper was due largely to Mr. Ungerer's kindness in suggesting the subject to the authors, and that, therefore, the members would like to hear what Mr. Ungerer had to say on the subject. He stated that the paper spoke for itself, being, in his opinion, a valuable contribution to the subject, and he only hoped that its presentation and the discussion which it had elicited would prove of benefit.

On motion of Vice-president A. M. Roehrig, the thanks of the branch were tendered to the authors, to Mr. Ungerer and to those taking part in the discussion.

### THE VOLATILE OILS OF THE U. S. PHARMACOPEIA.

By PAUL JEANCARD AND CONRAD SATIE, CANNES, FRANCE.

In most European countries the function of pharmacopoeias is to consider products only as utilized in pharmacy. This restriction is quite consistent with the etymology of the word. In the United States, on the other hand, the Pharmacopoeia has the authority of a legal standard not only for products which are intended for pharmaceutical use but for table consumption as well.

An official book with so broad a province should maintain great exactitude in its descriptions and strict precision in the analytical methods which are used to demonstrate the quality of products. We are persuaded that the eighth edition of the United States Pharmacopoeia, notwithstanding the great amount of work which has been accomplished by its authors, is lacking in this precision. It is not our intention to review the description of the numerous products mentioned in the Pharmacopoeia. Our sole purpose in the following pages is to review that part of the book which deals with the essential oils and perfumes and to show that it is not always consistent with the established facts of science and industry.

We shall consider the subject in two divisions. In the first we shall collect in a systematic manner the analytical methods scattered here and there in the Pharmacopoeia. The second part will be taken up with a discussion of the essential oils and some of their constituents.

#### I. ANALYTICAL METHODS.

Volatile oils are mixtures of certain chemical bodies: such as terpenes, alcohols, ketones, etc. They have no fixed physical or chemical properties, the properties varying within certain limits which depend on the place of origin of the plant, the climatological influences, the condition of cultivation, method of preparation, etc. The limits of variation in a given property of a substance, which have been recorded by investigators during a number of years, we shall speak of as "general limits." These represent the extremes of variation.

We have recently<sup>1</sup> proposed that there also be recognized "annual limits." It is obvious that the latter would be more restricted than the former and would necessitate a more exact determination of the purity of a substance.

A Pharmacopoeia which is in force for ten years or longer should make use of general limits only. It is evident that those limits represent the extremes of variability.

<sup>1</sup>P. Jeancard and C. Satie: "La Chimie des parfums en 1908" —"Revue Generale de Chimie pure et appliquee 1909," vol. XII, page 173, and "American Perfumer," 1909, vol. IV., page 82.

## DETERMINATION OF PHYSICAL PROPERTIES.

The specific gravity, the optical rotation, the solubility in dilute alcohol, the points of fusion and solidification are the principal physical properties to be determined in the analysis of essential oils.

**Specific Gravity.**—Two methods are recommended by the Pharmacopeia for this determination: Westphal's balance and the pycnometer. The temperature at which the specific gravity is to be determined is specified as 25° C.

The choice of 25° C. as normal temperature is perhaps not a very fortunate one. It is a somewhat *summer* temperature! It would have been preferable to keep the temperature of 15°, which is the mean temperature and also that used in most of the determinations of the physicists since the middle of the nineteenth century.

It will be noticed that the old tables of alcoholic percentage demanding a temperature of 15.66° have been kept by the Pharmacopeia, whence arises what might be called by the hypercritical an anomaly: the solubility of oil of rosemary is to be determined at 25° C. in alcohol which is 80% at 15.66°!

In the ordinary practice of laboratories, the determinations of specific gravity are so much the more exact when made at room temperature. The pharmacist and the industrial chemist need to know only the three first decimals of the specific gravity. In order to know whether the figure found is within the general limits, it is necessary to make use of a coefficient to calculate the specific gravity at standard temperature. For the essential oils, the coefficient is generally something between 0.0006 and 0.0008; this is of course not absolutely exact but it is so convenient and expeditious that this mode of comparison is used daily for mineral and vegetable oils and animal fats.

**Optical Rotation.**—For certain essential oils, the oil of lemon, oil of sweet orange and oil of bitter orange, the influence of temperature on the optical rotation is not a negligible factor.

It is customary to observe the rotation at a temperature of 20° C. The Pharmacopeia would have done well to have allowed the observation in the case of oil lemon and of orange to remain at the lower temperature of 20° instead of 25°.

**Solubility.**—Most chemical works do not sufficiently emphasize the importance of the determination of the solubility in dilute alcohol as a means of investigation, although the fact that a certain organic product is soluble in the usual solvents is a fact of some utility. The Pharmacopeia is not exempt from this criticism.

The determination of the solubility of essential oils has two distinct aims. In the preparation of perfumery for instance, it is necessary to know the solubility of the oil in dilute alcohol in order to obtain a clear preparation. On the other hand a test of the solubility in alcohol furnishes a very simple means of detecting certain frauds or whether the preparation has been properly distilled. The solubility in dilute alcohol varies with the nature of the chemical constitution. For instance, the alcohols, aldehydes and phenols are very soluble in 60, 65 and 70% alcohol.

The aromatic hydrocarbons and the terpenes are only soluble in alcohol of 85 to 90% strength and the sesquiterpenes are only slightly or not at all soluble in 96% alcohol. In considering a series of ethers obtained by utilizing the same acid and different alcohols it will be noticed that the solubility varies inversely with the molecular weight. As an example might be mentioned the index of solubility of the benzoates in 70% alcohol—

Benzoate of Methyl.....	1.5
" " Ethyl.....	2.
" " Propyl.....	4.2
" " Iso-butyl.....	8.1
" " Iso-amyl.....	13.

As essential oils are mixtures of alcohols, ethers, terpenes, etc., the above principle may be utilized by employing a series of three alcohols differing to the extent of 5%. Thus the lavender from the high Alps and summits of the low Alps is soluble in 2 to 3 volumes of 70% alcohol and slightly or not at all soluble in 20 volumes of 65% alcohol.

That from the Italian Alps is soluble in less than 2 volumes of 70% alcohol and in 3 to 4 volumes of 65% alcohol. The index of saponification of the former is something between 100 and 140, and that of the latter between 58 and 90. This example illustrates the correlation that exists between the index of saponification and the solubility of oil of lavender.<sup>1</sup>

It would be found convenient to state the solubility in three successive alcohols differing by 5%, although the solubility in the most dilute alcohol is in itself an important point. Unfortunately this is not the method indicated by the Pharmacopeia. Some figures of solubility given in the Pharmacopeia will be found in the following table:

## SOLUBILITY.

	95% alcohol. in any proportion	70% alcohol. 1 volume 3 volumes 2 volumes 2 volumes
Bitter almonds .....		
Eucalyptus .....		
Cloves .....	1 volume	
Cassia .....		
Eugenol .....	in any proportion	2 volumes

If bitter almonds, eucalyptus and cloves are soluble in 1 to 3 volumes of 70% alcohol, it is superfluous to determine their solubility in 95% alcohol.

The following table as determined by us shows how the solubility of the essential oils should be expressed.

## SOLUBILITY.

	70% alcohol.	65% alcohol.	60% alcohol.
Bitter almonds .....	1 to 1.5	1.5 to 2	2 to 2.5
Cassia.....	2	3 to 5	10 to 20
Cloves.....	1 to 1.5	1.5 to 2	2 to 5
Pennyroyal .....	1.8 to 2	2 to 5	5 to 8
Rue .....	2 to 3	5 to 7	10 to 20
Eugenol .....	1	1 to 5	3

The determination of the solubility under such conditions renders information of distinct value. There is little use in the determination required by the Pharmacopeia.

## 2. DETERMINATION OF CHEMICAL PROPERTIES.

There are at present in organic chemistry no methods for determining with precision the chemical constituents of such mixtures. Approximate figures are obtained with difficulty. We are in the habit of speaking of the contents of acetate of linalyl, thymol and cinnamic aldehyde in oil of lavender, of thyme or of cassia. This way of speaking hides our real ignorance of the question. For instance in lavender and bergamot which contain a large proportion of the acetate of linalyl, we overlook the presence of certain other ethers which contribute to the aroma of these oils.

With these qualifications we shall pass on to a review of the methods generally employed in the determination of chemical properties and compare them with those described in the Pharmacopeia.

**Acidity.**—The Pharmacopeia does not give any figure of acidity except in the case of bitter almond in which the content of hydrocyanic acid is to be determined volumetrically. It is necessary, however, to determine the acidity of those oils of which the ether content is characteristic, as lavender or bergamot. This determination will demonstrate whether the oil is of recent preparation.

**Ethers and the Index of Saponification.**—We determine the index of saponification in the following manner: Weigh exactly 2 gm. of the oil in a flask of Bohemian glass having a capacity of 100 c.c. and add 10-20 c.c. of N<sub>2</sub> potassium hydrate solution. The flask should be furnished with a cooling tube 10-12 mm. in diameter and 1 m. long. The mixture is then boiled on a water bath for half an hour. After cooling, water is added and the excess of alkali titrated with N<sub>2</sub> solution of sulphuric acid using phenol phthaleine as an indicator.<sup>2</sup>

We call normal solutions those containing the number of grams per litre equal to the molecular weight of the substance. The solutions employed for the determination of the index of saponification contain then (The

<sup>1</sup>P. Jeancard, etc., C. Satie. "Remarques analytiques sur les essences de Lavande"—Bulletin de la Société Chimique de France, 1908—4th series vol. III, page 155.

<sup>2</sup>P. Jeancard et C. Satie: "Abrégé de la Chimie des Parfums." Paris, 1904, page 22.

Pharmacopeia has adopted the atomic weights of the International Commission of 1904. These weights vary considerably from those published in 1909 by the same commission. The molecular weight of potassium hydrate and sulphuric acid were given as—

	1904.	1909.
Potassium hydrate.....	55.74	56.10
Sulphuric acid.....	97.35	98.07

For industrial analyses it would be preferable to retain the former values of 56 and 98 than to be obliged each year to change the strength of normal solutions.)

Alcoholic potassium hydrate N. 28 gm. KOH per L.  
Sulphuric acid N. 12.25 gm. of  $H_2SO_4$  per L.

In the above determination the index of saponification is calculated directly from the amount of acid required and it is easy to construct a table giving the index and the quantity of ethers.

We insert an illustrative table which we have published.

$H_2SO_4$ N.	I. S.	$C^{12}H^{20}O^2$ %
5cc.	105.	36.75
5.1	104.3	36.50
5.2	103.6	36.26
5.3	102.9	36.01
5.4	102.2	35.77
5.5	101.5	35.52
5.6	100.8	35.28
5.7	100.1	35.03
5.8	99.4	34.79
5.9	98.7	34.54
6.	98.	34.05

We have calculated the sources of error inherent in this determination of the index of saponification and the ether content deduced from it: errors in weighing, in measuring the volume of acid and the potash solution, etc. The ether content can be guaranteed only to one unit.

Let us see what the Pharmacopeia has to say upon the subject of this determination. The acid employed is N. solution and therefore contains 24.33 gm. to the litre. It will be noticed that this solution is twice as strong as ours. A difference of one-tenth c.c. in our solution makes a difference of .25 in the ether content, while with the Pharmacopeial solution, the difference is .50. That is to say that with this solution the ether content may be determined to within two units only.

For the determination of the indices the Pharmacopeia indicates two methods which differ according to the oil.

If it is desired to determine only the index of saponification before acetylation, it is directed to weigh 2 c.c. of the oil which is then transferred to a flask having a capacity of 100 c.c. and then rinse out with alcohol the vessel in which the oil was weighed. The procedure is then concluded as described above.

Instead of weighing 2 c.c. of the oil, would it not be better to weigh two grams, which would simplify the calculation and permit of the use of such a table as was described above? Another criticism. We weigh two grams of the essence directly in the flask which is to be used for saponification, and we have more confidence in this direct method than in the use of two vessels.

The second method which is that indicated for the determination of the indices of peppermint and rosemary is most extraordinary. It is endeavored to determine the two indices of saponification before and after acetylation with the same portion of oil.

So much is undertaken that little is accomplished. Let us consider a little. Exactly 10 c.c. of oil are weighed. After saponification the excess of alkali is titrated with sulphuric acid. The product of saponification is washed several times with water to eliminate the ethyl alcohol. This done, one acetylates by means of acetic anhydrid and after washing and neutralizing determines the index.

It would have been preferable so far as precision and rapidity are concerned to determine the two indices by two separate tests. In the first determination washing with water before titrating with sulphuric acid.

(To be concluded.)

## MEETING OF THE PHILADELPHIA BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

On the 13th inst. the regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held at the Philadelphia College of Pharmacy. Among the papers read were two by Mr. W. G. Ungerer, New York, entitled "Who Makes the Adulterator" (read by Prof. Jos. P. Remington) and the "Would-be Perfumer" (read by Dr. Vanderkled, chief chemist for H. K. Mulford Co.).

Our correspondent states that the latter brought forth many smiles from the audience, some of whom have evidently some time or other tried their hand in the perfume business. This paper will be published in our next issue.

### Who Makes the Adulterator?

By W. G. UNGERER, New York.

It is the purchaser that makes the adulterator. No manufacturer or dealer adulterates essential oils with malice prepense. There is only one way in which the practice of adulteration is introduced. It is when the prospective purchaser meets the essential oil dealer with forbidding countenance and demands a lower price than the temptation to adulterate often arises. Most men are honest and want to remain so. Some yield to the wiles of the tempter only when they face the absolute desire of the purchaser to have the goods at a lower price than the cost of production. And then they fall from grace.

The first manufacturers of essential oils tried their best to extract the oils in as pure a state as possible. When they succeeded they went to the purchasers and offered their products at an honest and fair profit. But then "enter the villain" in the person of the purchaser, and quoth he, "I will not pay thee thy price, but ten cents less per pound," and the grasping manufacturer, who thinks he sees his order dropping into the pocket of another but unscrupulous purveyor, agrees to fill the order at the lower price. But he must live, and in order to live, he mixes some adulterant with the pure oil, and behold, the Adulterator is born!

The salesmen are anxious to secure orders, and when they are told, as sometimes happens, "I can buy Oil Neroli for \$50," when the price of pure oil is \$75 per pound, they meet the price, and in order to do it their firms often resort to replacements or call upon chemists to suggest substances safe from detection, to be used.

It is strange but true that if a buyer writes to a number of essential oil houses for quotations upon some article, he may find a variation of as much as 33 per cent. This is not explicable on the basis of difference in profits. The products are very different in quality. Their best friend would not recognize them as entitled to the same name, although not possible of analytic proof.

However, the extent of adulteration is very much exaggerated, as most of the dealers prefer to handle honest, pure goods, upon a fair margin of profit.

Some of the buyers say they are satisfied if they get goods which correspond to the requirements of the U. S. Pharmacopeia. But especially for the perfumer, who should be the most critical, this is far from sufficient. A skillful "sophisticator" could make an oil lavender, which would comply with all of the tests of the Pharmacopeia



and yet be far from efficient in odor for the manufacture of good perfumes.

Chemistry is not, in this sense, an exact science. There is much that escapes the chemical test, but is detected by the test of the nose. The real standard, after all is said and done, is the nose test. If you want pure essential oils you must be prepared to pay the price. Not necessarily the first price asked, but a price which affords a margin of profit to the manufacturer or dealer. When, by any device, you beat down the price below the living level, you may be almost sure that the product will not be sold at a loss. What you get is worth no more than you pay for it, and once the adulterator begins he does not know where to stop. He is apt to go beyond what is expected and give you far less than you have the right to expect.

The real standard is purity itself, and this is the only real basis for any judgment of value. The degree of adulteration is impossible to estimate. A departure from the absolute means opening the door to all kinds of abuses. Safety lies in purity alone. The true product is worth a fair price, and nothing else is worth any price at all. The best houses—they are in the majority—can not be tempted.

If you were to inspect the books of the manufacturers and dealers you would be surprised to note the small margin of profit at the original prices fixed for unsophisticated oils. What then is to be expected if these prices are cut down to a level below the cost of production?

Who is responsible for adulteration?

#### CITRONELLA OIL.

BY ERNEST J. PARRY, B. Sc., F.I.C., F.C.S.

For many years past the trade in citronella oil, both in London and in the United States, has been in a very unsatisfactory condition. Messrs. Schimmel & Co. were the first to recognize that a very great deal of the oil exported from Ceylon was impure, and carried out a series of experiments in order to attempt to cope with the growing adulteration. As a result of their experiments they suggested that no oil should be accepted on a contract of sale unless it passed the solubility test which soon became associated with their name under the style of "Schimmel's test." This test consisted in dissolving the oil in one or two volumes of 80% alcohol, in which it should be soluble, and then adding up to 10 volumes of the alcohol, when nothing more than a slight opalescence should result. From the knowledge available at that time it was believed that this test would exclude all the probable adulterants. It soon became obvious that this was not so, and that Schimmel's test merely restricted the amount of adulteration. The native adulterators added just so much kerosene as would allow the oil to pass the test. And so things went on for years, until today it is a definite fact that practically every drum of citronella oil which leaves Ceylon is adulterated. This system was encouraged by the conditions of sale on the markets which merely stated that the delivery was to pass Schimmel's test. It is true that in English law, and probably also in United States law (but of this I am not certain), a contract which defines the article sold, that is states "We have this day sold you 10 drums of citronella oil," requires the delivery of pure citronella oil, even if a sample of adulterated oil were submitted on buying, and even if a qualification such as "only guaranteed to pass

Schimmel's test" were added. The contract once having been a sale by description, cannot be relieved by a sample or such a qualification as that quoted. But as a matter of fact any dispute on such a contract is almost invariably settled by arbitration and the accurate legal position is rarely considered.

This being the state of things, it became apparent that if some clever native were able to find an adulterant which was more soluble than kerosene he could add a larger quantity and yet succeed in delivering citronella oil which passed Schimmel's test.

This actually happened a few years ago and the writer was called in to investigate a large parcel of 40 drums of 1,000 lbs. each. It was then found that a comparatively soluble spirit, probably resin spirit, was being used and a larger quantity of adulterant being put into the oil. Firm steps were talked of, but nothing was done. The next step attempted by the artful adulterator was to add 10% of alcohol, which was obtained under certain circumstances duty free, and then having got some alcohol into the oil, it was obvious that still more of the less readily soluble adulterant could be added, as the 80% alcohol used in the test would now be fortified by the alcohol already in the oil. One shipment got through the British customs, but was detected in the writer's laboratory. A second shipment appeared but was detected by the customs, and duty was demanded, and thus the addition of alcohol at once ceased. Pure citronella oil can easily be obtained from Singapore and from Java, and even when its price is taken into account no intelligent soap maker can fail to see the difference in value of the two types of oil. A little pure oil is sent from Ceylon, usually under the name "Estate Oil," but even this requires careful examination. After an exhaustive examination of a very large number of pure samples and a much larger number of adulterated oils, the writer, in conjunction with C. T. Bennett, suggested that the following should be taken as standards for pure citronella oil:

(1) The oil must dissolve clear, or at most with the slightest opalescence, in 10 volumes of 80% alcohol at 20°.

(2) The first ten per cent. distilled under reduced pressure (20-40 mm.) must have a specific gravity not below 0.858, and a refractive index at 20° not below 1.4570.

These figures will exclude most of the adulterated oils, but even then will not differentiate between pure low grade and high grade oils. A few years ago the facilities for adulteration were not reduced by the fact that the markets resolved to specify what they considered should be the exact details of Schimmel's test, and the test was defined in terms on the contracts, such as were never contemplated originally by Messrs. Schimmel & Co. These contracts now contain a clause that the oil shall pass Schimmel's test, which is to be understood as follows: that one volume of the oil dissolved in 10 volumes of 80% alcohol shall not, after standing for 24 hours, show on the surface any oil globules visible to the naked eye. All this brings us up to the present conditions of the trade in this oil. At the present moment adulteration has gone to such a limit that many of the parcels arriving do not even pass this reduced standard required by the market contracts, much less the test which was introduced a few years ago under the name of the "raised Schimmel's test," which made it necessary that a sample to which, on examination, 10% of kerosene was added, should still pass the ordinary Schimmel's test.

The consequence is that buyers and users of citronella oil have no guarantee that the oil which they use shall keep

at all constant in character, as they must be prepared to accept oil which deteriorates from time to time as the art of the adulterator improves.

What, then, will be asked, is the remedy?

In the writer's opinion, which is shared by Mr. John Umney, there is but one. Citronella oil owes its perfume value to two principal ingredients. One of them is citronellal, an aldehyde discovered by an American chemist, and the aromatic alcohol, geraniol. On acetylation geraniol is converted into geranyl acetate, and citronellal becomes first isomerized into isopulegol and this is then converted into isopulegyl acetate. A saponification of these alcoholic acetates gives a determination in terms of the alcohol geraniol, the actual result of course including the citronellal. And upon the total of these two bodies the oil practically depends for its value. It should therefore be sold upon its "geraniol value," when buyers would know that they were getting full value for their money, and adulteration would almost cease, since there would be no point in reducing, say a 75% oil to 55%, for the adulterator would simply be paying freight on the adulterant, and losing every trace of its value.

This principle has worked success fully in the cases of cassia oil and lemongrass oil for some years. And if a scale were arranged by which the price was fixed for say 70% oil, and more or less to be paid according to excess or deficiency of geraniol.

In the fine Java and Singapore distillates, and in the finest Estate Oil of Ceylon, the total geraniol and citronellal varies from 77% to 83%, whilst in the Ceylon oils of commerce a few years ago 60-62% was found. This dropped a few years ago to about 58%, and now it is common to find oils with only 55% present.

When the quantity produced is taken into consideration, it is to be doubted whether there is any essential oil produced in the world which is so largely adulterated, and it is only the fixing of a reasonable standard as a basis of contracts that will enable a pure oil to be delivered.

When this comes about, there can be no doubt that the quality of the articles which are perfumed with this oil will greatly improve.

### ESSENTIAL OILS IN THE WHITE CROSS CONGRESS.

In our issue of November, 1909, we gave a brief outline of the results arrived at by section III of the second International Congress for the Repression of Adulteration, held in Paris Oct. 17 to 23 (inc.), 1909. Through the courtesy of M. Justin Dupont, reporter to the Section of the Essential Oils (59c. III), we are able to give our readers the complete report, which is here for the first time published in full.

On account of the special interest that attaches to lemon oil at this time, we must point out that if the recent contribution to the subject by Mr. E. M. Chace, and the important article by Mr. R. S. Hiltner in this issue, are accepted as the voice of authority, the conclusions of the White Cross Congress in regard to lemon oil are already obsolete. The question is, however, yet an open one, for the report of Mr. Chace has not received universal approval, and the comments of leading chemists on Mr. Hiltner's revised method for determining citral are yet to be heard.

We trust that the third Congress will take up such im-

portant oils as rose, geranium, and neroli, concerning which there is so urgent a need for the establishment of definite standards; or, at least, reasonable standards by which the careful buyer may be guided.

### Second International Congress for the Suppression of Adulterations.

By M. JUSTIN DUPONT.

Reporter to the Section of the Essential Oils.

The second International Congress for the suppression of adulterations in connection with food-stuffs, chemical products, pharmaceutical raw materials, etc., organized by the International Society of the White Cross of Geneva, met at Paris from October 17 to October 24. A year ago, in dealing with the first Congress held at Geneva, M. Emile Perrot explained to the readers the objects which the promoters of this work are pursuing. Today a new step forward has been taken, and the present article is written to describe the results which have been gained.

It is well known that an important movement is on foot at the present time in various countries, notably in France, with the object of collecting in a sort of *Godex alimentarius*, as M. le Ministre Ruau expresses it, the characters of purity which it is expedient to require of substances destined for alimentary purposes. It is intended to include in this work, not only matters relating directly to food-stuffs, but also chemical products and pharmaceutical raw materials. The essential oils and aromatic products would fall within this category. At Geneva the first Congress had agreed upon a definition of what should be understood by the word Essential Oil. Since then a special Commission has been engaged in establishing, prior to submitting them for discussion at the International Congress, the definitions and the characters which it may be expedient to apply to the commonest essential oils. This Commission formed one of the units of the Third Section, under the presidency of Professor Guignard, of the Institute, Director of the Higher School of Pharmacy at Paris. The results of its work were printed and submitted, before the opening of the Congress, to the examination of all the parties interested, so as to permit of the establishment of a rapid and concise discussion leading to a definite solution.

The Commission was composed in a manner at once the most logical and happily conceived, uniting in its midst scientific men and manufacturers, those who have to make use of the products forming the subject under study, those who produce them and those whose part it is to control their purity.

There is every reason to believe that the definitions thus established, with all possible guarantees of competence and sincerity, will be called upon to serve as guides to the agents of the public authority when they come to draw up regulations for the putting in force of the laws against adulterations. In the industrial world it is impossible to express too high an appreciation of those who, invested, so to speak, with an absolute power in fixing the characteristics of purity to be exacted in the case of commercial products, have made a point of co-operating with advisers selected from both the consumers and the producers.

This thought, that the definitions adopted were without doubt destined one day to have, in a sense, the force of law, has frequently stayed the Commission at a moment when too rigorous limits were proposed. The Congress has followed it in this path. That is why, in the definitions adopted, which will be found further on, characters will sometimes be noticed which may differ slightly from those which commerce generally exacts for products of high quality. This point the members of the Commission have never for a moment lost sight of; but they have desired to avoid the danger lest products of medium quality, exempt, nevertheless, from all adulteration, should prove to be the cause of legal proceedings against those who hold them. Such materials are only amenable to the criticism of the purchaser, not to the rigor of the law.

The Paris Congress, with M. Armand Gautier as Honorary President, M. Boardas, head of the Laboratories of

the Treasury, as President, and M. Eugene Roux, the head of the Department for the Suppression of Adulterations of the Board of Agriculture, as vice-president, was opened in the presence of M. Ruau, the Minister of Agriculture, of the President of the White Cross and of the delegates from a large number of States. Its organization was perfect, thanks to the devoted services of the energetic General Secretary M. Charles Franche.

The sitting devoted to the essential oils was held under the chairmanship of M. Emile Perrot, assisted by M. Fayolle and M. Justin Dupont. The essential oil industry was represented by MM. Baube, Dupont and Pillett, members of the French delegation; M. Dufour, of the firm of Sachsse and Co., of Leipzig; M. Achille Jonas Hanart, President of the Essential Oil Trades Committee, of Belgium, and M. Aimé Jonas Hanart. MM. Schimmel and Co., of Militz, and MM. Roure-Bertrand Fils, of Grasse, had sent in written communications. In the course of the discussion some remarks were also made by Mr. Charles Umney, of London.

On taking account in the largest possible degree of these communications, as well as of those which were produced by the members present in the course of the discussion, the proposals of the French Commission have been modified or extended on a certain number of points. In this way the following definitions have been definitely adopted. As we have said before, they represent the *commercially pure product*. Any product lying outside the limits so established may be suspected and depends on an expert's valuation.

#### OIL OF ABSINTH<sup>1</sup> (WORMWOOD).

Obtained by the distillation of the *Artemisia absinthium* or Great Wormwood.

*Characters*.—Green or dark blue liquid, or even dark brown. Density at 15 degs. C. = 0.901 to 0.955. Solubility: 1 part dissolves in 2 to 4 parts of 90 per cent. alcohol.

#### OIL OF BITTER ALMONDS.

Obtained by the treatment of almonds (*Amygdalus communis*) previously deprived of the fatty oil. The almonds which serve for this preparation are, in practice, mainly those of the apricot tree (*Prunus Armeniaca*) obtained from Asia Minor.

*Characters*.—Colorless and neutral oil when freshly-distilled. On keeping, it becomes yellow and acquires an acid reaction owing to the formation of benzoic acid. It should never show a reaction for *chlorine*. Optically inactive, highly refractive. Density at 15 degs. C. = 1.045 to 1.070. Solubility: 1 part in 1 to 2 parts of 70 per cent. alcohol; 1 part in 1.5 to 2.5 parts of 65 per cent. alcohol; 1 part in 2 to 3 parts of 60 per cent. alcohol.

Oil of bitter almonds freed from hydrocyanic acid has a density of 1.050 to 1.065 at 15 degs. C.

*NOTE*.—An oil of bitter almonds may show a higher density than the limit indicated above, without having been adulterated.

This abnormal density would correspond to the presence of a considerable quantity of phenylisocyanonitrile. This substance is formed spontaneously in the interior of the oil by the action of the benzaldehyde on the hydrocyanic acid.

#### ANETHOL.

This is the methylic ester of paraprophenylphenol, which constitutes the solid portion of the oils of anise and badiana, and which is also met with in other essential oils (fennel, tarragon, etc.).

*Characters*.—Lamelliform crystals, with an odor of anise. Density at + 25 degs. C. = 0.984 to 0.986. Without action on polarized light. Melting point: 22-23 degs. C. Solidifying point: 21-22 degs. C.

#### OIL OF ANISE.

Oil of Anise is obtained by distillation with steam of the fruits of the *Pimpinella Anisum* L. (*Umbelliferae*).

*Characters*.—Colorless, very highly refractive liquid. Density at 20 degs. C. = 0.980 to 0.990. Polarimetric rotation: Feebly levorotatory, should not be dextrorotatory. Solidifying point: + 15 degs. to 19 degs. C. Anethol content: 80-90 per cent.

<sup>1</sup> In absence of special indications, the various physical constants have been determined at a temperature of 15° C.

Oil of anise and oil of badiana should not be delivered indiscriminately one for the other; the marked difference between the organoleptic properties readily enables them to be distinguished.

#### OIL OF BADIANA (STAR-ANISE).

Obtained by the distillation of the fruits of *Illicium verum* Hook. (*Magnoliaceae*).

*Characters*.—Density at 20 degs. C. = 0.980 to 0.990. Feebly levorotatory: should not be dextrorotatory. Solidifying point: 14 to 18 degs. C. Solubility: 1 to 1.5 part in 6 parts of 90 per cent. alcohol. Anethol-content: 80 to 90 per cent.

#### OIL OF BERGAMOT.

Essential oil prepared by the cold process by pressing the fresh rind of the *Citrus bergamia* Risso.

*Characters*.—Liquid of a more or less intense greenish-yellow color. Density at 15 degs. C. = 0.879 to 0.887. Polarimetric rotation: + 8 degs. to + 25 degs. C. (calculated for a tube of 100 mm. in length). Ester-content (calculated as linalyl acetate) 30 to 45 per cent. Residue from evaporation on the boiling water bath: 3 to 6 per cent.

*NOTE*.—Essential oils have many times been met with which are certainly unsophisticated and yet contain less than 30 per cent. of esters. This is the case, among others, with essential oils manufactured at the beginning of the harvest from fruits and perfectly mature. It would be unjust in such cases to condemn the oil as adulterated. The purchaser is very well able to make the necessary rebate from the price of the article.

For a long time now attention has been drawn to the practice of increasing the ester-content by the addition of bodies such as methyl oxalate or succinate, or others. Hence the necessity, in cases of doubt, of carefully examining the alkaline liquors resulting from the saponification, and testing for the acids thus introduced in the form of esters.

#### OIL OF CARAWAY.

Obtained by the distillation of the fruits of *Carum Carvi* L. (*Umbelliferae*).

*Characters*.—Colorless liquid, becoming yellow on keeping. Density at 15 degs. C. = 0.903 to 0.918. Polarimetric rotation: + 70 degs. to + 85 degs. (l = 100 mm.) Carvone-contents: 45 to 60 per cent.

#### OIL OF CHINESE CINNAMON.

Essential oil obtained by the distillation of the leaves of *Cinnamomum Cassia* Blume (*Lauraceae*).

*Characters*.—Liquid of a more or less deep yellow color; highly refractive. Density at 15 degs. C. = 1.053 to 1.070. Optically nearly inactive. Cinnamic aldehyde-contents: 70 to 90 per cent.

#### OIL OF CLOVES.

Obtained by the steam-distillation of cloves, the unopened flower-buds of *Caryophyllus Aromaticus* L. (*Myrtaceae*).

*Character*.—Oil nearly colorless or yellowish in color when freshly distilled, becoming brown on keeping. Density at 15 degs. C. = 1.040 to 1.068. Eugenol-contents: 70 to 92 per cent.

#### OIL OF CORIANDER.

Obtained by the distillation of the fruits of *Coriandrum Sativum* L. (*Umbelliferae*).

*Characters*.—Density at 15 degs. C. = 0.870 to 0.885. Polarimetric rotation: + 5 degs. to + 13 degs.

#### OIL OF CUMMIN.

Obtained by the distillation of the fruits of *Cuminum Cyminum* L. (*Umbelliferae*).

*Characters*.—Density at 15 degs. C. = 0.900 to 0.930. Polarimetric rotation: + 4 degs. to + 8 degs. Cuminaldehyde-contents: 30 to 50 per cent.

#### OIL OF CYPRESS.

Obtained by the distillation of the leaves and young branches of *Cupressus Sempervirens* L.

*Characters*.—Yellowish liquid. Density at 15 degs. C. = 0.866 to 0.890. Polarimetric rotation: + 5 degs. to + 30 degs.

*NOTE*.—The considerable differences observed in the polarimetric rotations are due to differences in geographical origin.

(To be concluded.)



## BOOK REVIEW.

**DIE MODERNE PARFUMERIE.** Directions, and a collection of recipes, for the production of all perfumes and cosmetics, with special reference to artificial scents. Compiled, in collaboration with other experts, by H. MANN. (Second revised edition; 559 pages.)

The general appreciation and employment which artificial perfumes enjoy nowadays in the trade is of comparatively recent date. When H. Mann first brought out his original work, five years ago, many perfumers were directly opposed to artificial perfumes, or wanted nothing to do with them. Now it is different. The progressive output of the manufacturers of artificial perfumes, growing also in quality, the example set by perfumers who advance with the times, and finally the profits yielded by the artificial perfumes and the fact that the novice found in the first edition of "Modern Perfumery" a competent instructor, were the causes of a transformation. This extended interest, as well as the new perfume products of the last decade, and new tendencies of fashion in perfumery made a second edition of the book desirable, even necessary. And now it is before us, an imposing volume of nearly 600 pages.

Casually turning the leaves, we note, by the present arrangement of the former single-column recipes, that the book is richer in contents; on closer examination, many changes in additions to the text are evident, that may be regarded as practical in a work intended for the use of the practical men.

The subdivision into three principal sections, perfumery, cosmetics, and appendix, is retained.

The first shows the improving hand of the author. Some apparently, secondary, but still important data, as for instance, regarding alcohol in perfumery, have been added; the series of infusions, solutions and tinctures is extended in various directions, special prominence being given the detailed treatment of solvents for artificial musk.

The recipes for extracts are preceded by some instructive statements concerning lasting or adhering odors and modern perfumes, whereas the recipes themselves in part changed and increased and for greater lucidity arranged in groups (elder, geranium, heliotrope and other extracts), where this was impossible, arranged in alphabetical order, as is also done with the recipes for toilet soaps in the addendum.

A separate chapter is devoted to beard cosmetics, while that relating to hair coloring, is largely new and more complete. The most important completions relate to skin cosmetics, and the chapter on perfumed baths, non-fatty skin creams, cosmetic borax and cucumber preparations, protective and bleaching cosmetics, preparations for the care of the nose, etc.

In the supplement to the first part, treating of toilet soaps and their perfumes, are many and valuable additions. Thus the production from basic soaps, of milled soaps, according to the usual method, is rewritten. An instructive table informs us regarding the behavior of artificial as well as natural perfumes in soap, above all, their effect on the color of the soap; no less interesting are the author's reasons for and against the keeping of soap perfumes in stock.

The recently popularized fluid soaps, for soap dispensers and aromatic devices, the soap leaves, tube soaps, non-fatty shaving soaps, etc., are the subject of special treatment that will in many instances afford welcome assistance.

The important part that, as in medicine, is played by secret preparations and specialties, so also in cosmetics, is impressed on our attention in turning the 69 pages of the chapter devoted to their discussion. We find much that reveals the extent of the fraud practised with secret cosmetic preparations.

Finally, a complete compendium of trade literature affords the progressive perfumer an opportunity to acquire the means of advancing his efforts in directions on which the work under discussion could not treat, while a complete index facilitates the easy finding of any recipe.

Taking it all in all, we can summarize our opinion that the second edition of "Modern Perfumery" is a timely, painstaking and conscientious work, capable of rendering the practical interests of cosmetics and perfumery a decided service.

## LEMON OIL: THE PINENE QUESTION.

BY ERNEST J. PARRY, B.Sc., F.I.C.

The full report of the United States Department of Agriculture on the occurrence of pinene in lemon oil, which was abstracted in the *Chemist and Druggist*, Nov. 27, p. 824, is, in my opinion, one of the most serious indictments against the Sicilian lemon-oil trade that has ever been made. It calls for the closest scrutiny by all those interested in the trade, and requires the careful attention of essential-oil analysts. It is, at the same time, a most valuable report, showing every evidence of careful work on samples of absolute authenticity. In the present note I discuss the report from two points of view—firstly, from the point of view of the evidence, both positive and negative, supplied by the report itself, and, secondly, from the point of view of external evidence.

In 1907 the department refused admission to the United States of something like 100,000 lbs. of lemon oil, which, as is probably well known, was afterwards accepted by the department and allowed to enter the United States.

The present circular appears to me to be an attempt in the first place to justify the initial refusal of the department to admit this oil into the States, and, secondly, an attempt to lay down standards which will regulate the future trade in the oil. As the question of the 100,000 lbs. of oil shipped in 1907 was settled long ago, it is not necessary to devote much attention to this specific case. I would point out, however, that while the present circular refers to a specific test for the presence of pinene in lemon oil, no mention of that test was made, so far as can be traced, in connection with the actual rejection of the parcels in question. In regard to this parcel, Messrs. Schimmel & Co. made the following remark in their "Report" of April, 1908: "The oil was released as it was found in the course of the negotiations that the oil was absolutely pure, and the statements of the United States Pharmacopœia are not correct. . . ." So far as it is possible to examine the position in 1907, the oil was rejected on the grounds that the rotation of the first 10 per cent. of the oil distilled was outside the pharmacopœial limits. The remark is made in the present report that the consignments referred to were confined to five importers, the large portion of them to one only. From the purely business point of view it may be remarked that these exporters included shippers of the highest character and integrity in Sicily, whose names are open secrets, and that their belief in the purity of the oil was justified by their sending out G. Bosurgi, an official representative of the Messina Chamber of Commerce, to attempt to show the American Government that the oils were pure. That these firms both believed and knew that the oil was pure is also evidenced by the fact that (as quoted in p. 7 of the report) the great majority of manufacturers gave every assistance to Mr. Chace, the representative of the American Department, in conducting his investigations.

Passing on to the evidence which the report itself contains as to the purity or otherwise of lemon oil in general, one can scarcely resist the conclusion that at least the American representative had failed to prove his case. The gist of the whole report is contained in the concluding sentence: "The only reasonable conclusion would seem to be that where pinene is found in lemon oil, using only ordinary means of distillation, it is *prima facie* proof of adulteration, whether or not the physical standards of the oil are abnormal."

Before discussing the methods by which the American representative came to the conclusion that pinene was present in these oils, it will be well to advert to the history of the controversy in regard to pinene in lemon oil. A study of this controversy strongly suggests that lemon oil alters in its character from year to year to a sufficient extent to justify one in concluding that traces of pinene might well be present in one year's pressing, and yet be absent, or at the most present only in minute traces, in another season's oil. In 1897 Messrs. Schimmel & Co., after a most exhaustive examination of an authentic sample of oil of lemon, said:

"Pure lemon oil does not contain pinene; if so, it is adulterated with turpentine" ("Report," 1897).

In October of the same year the same authorities stated that after a careful examination of 50 kilos. of oil of lemon no trace of pinene could be discovered. They added:

"This will serve as additional evidence that pinene is not a normal constituent of oil of lemon."

In 1902 Messrs. Burgess and Child stated that they had discovered pinene as a normal constituent of pure oil of lemon. This discovery surprised Messrs. Schimmel & Co., who wrote as follows in their "Report" of 1902:

"What astonished us most in the foregoing (i. e., Burgess' report) was that lemon oil is stated to contain pinene, and this all the more as we have repeatedly conducted examinations on this matter, and always have been able to prove the absence of pinene; but on the strength of this communication we at once examined different samples from our stock, and we have, as a matter of fact, detected in the first running of each sample (without requiring for this purpose a twelve-beaded Young's dephlegmator) a small quantity of a levorotatory hydrocarbon which yielded a nitroso-chloride, and from that a nitrol-benzylamine, which shows the same melting-point as pinene nitrol-benzylamine. This would no doubt point to pinene, and, as the quantity of the nitroso-chloride obtained is but very small, one could not even conclude that turpentine oil had been added purposely."

In October, 1902, Messrs. Schimmel again examined two oils obtained from a reliable source, which had been pressed specially for the purpose of their examination. In both cases pinene was detected in the oil. In their October, 1902, "Report" the following statement was made in regard to thirty-six authentic samples of lemon oil originating from different districts in Sicily and obtained from Mr. Jacob, the well-known German Consul in the island:

"The oils gave us a welcome opportunity of examining them in other directions. . . . It was not only a matter of interest, but also of importance, to determine whether pinene, which up to the present had not been found in lemon oils, is an actual constituent of all lemon oils, or whether its presence depends upon the source of origin of the oil or the time when it was pressed. As the abundant material at our disposal might vouchsafe certain information on this point we tested all the thirty-six oils for pinene, and we have detected this body in all of them without exception. The pinene content was, of course, very low, and moreover in the reverse ratio to the rotation

of the oil, so that the oils with the least rotation contain comparatively the largest proportion of pinene. The fractions which came under consideration for this purpose amounted to between 0.2 and 0.8 per cent. of the oil. It follows that a very small, hardly demonstrable, content of pinene in lemon oil is no reason for rejecting such oil as adulterated." [See note at the end.]

Assuming, therefore, that the methods of the examination of the oil adopted by Mr. Chace are correct, it is not unreasonable to infer that the presence of minute quantities of pinene in lemon oil has been established to be a fact, generally, and that it may be possible that Mr. Chace's results in not finding pinene in his authentic samples are due to the differences to be observed in lemon oil from season to season owing to climatic and other conditions. (It may be suggested, and with some reason, that Chace's test will not detect the minute quantities of pinene naturally present.) It is hardly necessary to adduce evidence of similar alterations in the characters of lemon oil from year to year, for all analysts engaged in this work are well acquainted with the facts. A perusal of any literature dealing with lemon oil from year to year will demonstrate beyond dispute the fact that lemon oil varies, for example, in its specific gravity and optical rotation very distinctly, according to the district in which it is produced, to the season at which the pressing takes place, and from year to year according to climatic and other external conditions.

Since an examination of the figures for the samples alleged to be adulterated does not reveal any special reason to suspect the oils, other than on account of their response to the microscopic pinene test, it appears quite possible that there were pure oils which may have been kept long enough to become "terebinthinate," and have developed a little pinene, before the test in question was applied.

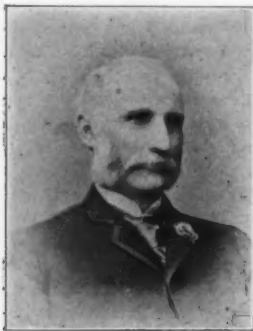
If pinene (as an adulterant indicating the addition of turpentine) were really present in the oils tabulated by Mr. Chace in his report, the following pertinent observations may well be made:

The average optical rotation of the first set of samples alleged to be adulterated was  $+58.8$  degs., and the average difference in the rotation of the first 10 per cent. distilled is 4.4 degs. In the second set of samples alleged to be adulterated the corresponding figures are  $+58.5$  degs. and 3.2 degs., whereas the authentic samples taken by Mr. Chace and his colleague in Sicily give the following figures: the first set show an average rotation of  $+59.97$  degs., and a difference figure of 4.23 degs.; the second set give as corresponding figures  $+62.69$  degs. and 2.79 degs.; and all the other sets of authentic samples quite similar figures with a difference figure reaching as high as 4.81 degs. A comparison of these sets of figures demonstrates practically no difference with regard to these optical rotations between the alleged adulterated samples and the admittedly genuine samples, but the presence of pinene as an adulterant, which must have been added as turpentine, would necessarily show a considerably higher difference than has actually been observed unless, indeed, turpentine to the extent of 1, 2 or 3 per cent. perhaps had been added. The addition of so small a quantity of turpentine as an adulterant is so ridiculous as to hardly require comment. The question which would suggest itself to any analyst is: Is it possible that so small a quantity of pinene could be added for the purpose of adulteration,

(Concluded on page 226.)

## TRADE NOTES

The house of Alfred G. Wright, Perfumer, Incorporated, was founded in 1866 by Alfred Wright. He was the first



ALFRED WRIGHT.

In his dealings with his fellow-men he was guided by the Golden Rule, and a favorite motto of his was "Better a dozen quarrels before a bargain than one after"; and in



ALFRED G. WRIGHT.

order that every customer should be perfectly satisfied, he invariably said, "If dissatisfied, send back at my expense." Mr. Wright was a man of positive convictions, and believed that the proper channel through which perfumes should be distributed was a retail drug store, and that policy has been followed by the house to the present day. After his death in January, 1891, the business was continued by his two sons, Alfred G. Wright and John S. Wright. In 1905 the business incorporated under its present name with Alfred G. Wright as president. Mr. Alfred G. Wright, on leaving school, entered the factory, and soon learned every branch of the business. The laboratory was always his "pet," and he has been the sole perfumer for over thirty-two years. About a month ago the business was affiliated with Wm. R. Warner & Co., of Philadelphia, and is now being removed to the latter city.

Mr. Alfred G. Wright will remain as president of the corporation and as perfumer, and Mr. John S. Wright retires and will continue his residence in Rochester, N. Y. Those who know Mr. Alfred G. Wright as we do admire the man for his good qualities of heart and mind, and wish him many more years of prosperity and health.

On Jan. 8 a large number of his friends arranged a dinner in his honor at Powers' Hotel, where Mr. Wright was lauded as a highly regarded citizen and business man of Rochester.

Mr. Geo. L. Ringel, of Fritzsche Brothers, New York, is making his headquarters now at 10 North street, Cincinnati, O., instead of at Detroit. Mr. Ringel is well known throughout the Ohio valley and surrounding country, and his easy yet alert manner assures him a hearty welcome all along the line.



GEO. L. RINGEL.

About a month ago the Utica Aluminum and Novelty Works moved into their new modernly equipped plant, where they are better prepared than ever to manufacture their line of aluminum ointment boxes, screw caps, tubes, toilet articles, etc. They have a New York office at 68 Broad street for the convenience of the Eastern trade and for the inspection of their line by manufacturers visiting this city.

Mr. Thurlow S. Chandler, New England representative of the C. B. Woodworth Sons Co., Rochester, N. Y., was a recent visitor to New York. He is not only an optimist, but believes in spreading the gospel of good cheer. The following lines from his pen should be carefully read by all "Knights of the Grip":

### THE SALESMAN'S CREED.

"The salesman who is not on the square and on the level, whose ways are not upright, soon goes to the wall of commercial life. If a man can live up to the following, he will surely succeed:

I believe in the goods I am selling; in the firm I am working for and in my ability to get results.

I believe that honest goods can be sold to honest men by honest methods.

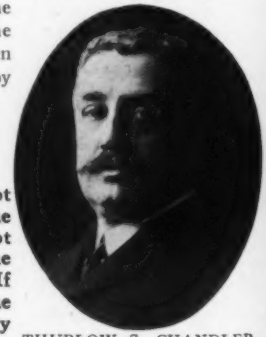
I believe in working, not waiting; in laughing, not weeping; in boosting, not knocking; and in the pleasure of selling goods.

I believe that a man gets what he goes after; that one order today is worth two orders tomorrow, and that no man is down and out unless he has lost faith in himself.

I believe in today and the work I am doing; in tomorrow and the work I hope to do, and in the sure reward which the future holds.

I believe in courtesy, in generosity, in good cheer, in kindness, in friendship and honest competition.

I believe there is an order somewhere for every man ready to take one. I believe I'm ready—right now. Are you?"



THURLOW S. CHANDLER.



Mr. James M. Bush, of W. J. Bush & Co., Ltd., London, is here on a visit to the American house. He arrived on the *Carmania*, Jan. 10, and will remain several weeks.

Mr. George Lueders, of George Lueders & Co., New York, went to Florida on Jan. 13, with Mrs. Lueders, for a few weeks' rest.

Mr. James B. McMahon, vice-president of the N. K. Fairbank Co., Chicago, has been elected to the vice-presidency of the American Cotton Oil Co., New York. It is stated that he will hold his former office in addition to that to which he has just been elected.

At a meeting held in the Grand Pacific Hotel, Chicago, on Dec. 3, 1909, the American Soap Manufacturers' Association was dissolved. A committee of three consisting of George Schroeder, of Jas. S. Kirk & Co., Chicago; F. H. Brennan, of the N. K. Fairbank Co., Chicago; and Carl A. Lautz, of Lautz Bros. & Co., Buffalo, was appointed to draft plans for a new association. The next gathering will be subject to the conclusions of the committee as to time and place.

Mr. L. Lowenstein is on an Eastern trip for Hymes Bros. Co., New York.

Mr. John B. Ladd retired on Jan. 1, 1910, from the firm of Ladd & Coffin, New York, makers of Lundborg's Perfumes, on account of ill health. The style has been changed to Price & Coffin, consisting of W. Cromwell Price and T. J. Coffin. Mr. Price has been with the firm for about 22 years and lately acted as its manager. Mr. Coffin was related to the late Sturgis Coffin, and has been a salesman for the firm for about 20 years. The new firm is planning to broaden the scope of the business, and we join with the trade in extending best wishes for many years of prosperity.

William B. Merrill, assistant treasurer and a director of Acker, Merrill & Condit, New York, died on Jan. 3 at the age of 48. He had been connected with the business for 33 years, having more lately been manager of the Chambers street store.

Mr. F. L. Washbourne, 30 Cliff street, New York, one of the older essential oil men, formerly with Dodge & Olcott, W. J. Bush & Co., Inc., and more recently with A. Klipstein & Co., New York, has taken charge of the accounts of two or three well-known European firms, and will confine his sales to American dealers.

Walter R. Leach, Southern representative of the Carr Lowrey Glass Co., started on his regular quarterly trip through the South and then to the Pacific coast, and will be gone four months.

A couple of Japanese have made a success of growing peppermint on three acres of land near Garden Grove, in Orange County, Cal., this season. This year four crops of peppermint were produced and the oil was extracted at the eucalyptus oil refinery at Garden Grove. It is stated that the Japanese will plant 40 acres to peppermint next season.

We have received from Ungerer & Co., New York, their greetings for 1910, printed in very neat style. These greetings breathe a spirit of good will without, and we therefore reprint them herewith:

"Another year has ended and another begun. Nineteen hundred and nine is another stone that has been added to the foundation of this house, and we are resuming our annual task with the same hopefulness and even more satisfaction than at any other time in our history.

"As the future can be judged only by the past, we feel that with justifiable pride and good reason, we can continue to offer our goods to discriminating buyers—those who appreciate quality and service.

"The year just closed was the best we have ever had, and we interpret that to mean that our friends recognize our desire to serve them on the highest plane; and we therefore pledge ourselves not to falter, but rather to strive better to merit this recognition.

"We have always before us the ideals of the founder of this business, and we therefore feel certain that as we progress in the fulfilment of these ideals we will progress to a commensurate degree in winning and holding the good will of our friends.

"We offer you our very best wishes for a year of prosperity and happiness.

It is not necessary to have labels reaching all around the cans in order to keep them from coming off, says the Arabol Mfg. Co., 100 William street, New York. The Tinnol will fasten labels to the tin so tightly that they will stick forever, without discoloring or blotting the labels.

The Williams Co., Rochester N. Y., successor to the Crescent Perfume Co., have gone into involuntary bankruptcy due to a petition filed by creditors on Dec. 12, 1909.

Van Dyk & Co., New York, have sent us their January catalog and price list of synthetics and a special booklet devoted to a description of their work as specialists in the manufacture of synthetic and artificial perfumery products. Van Dyk & Co. state that they are the only house in the United States specializing in this way, and they offer to give practical information in regard to the advantageous use of their products. They are good advertisers, as evidenced by their use of a perfumed insert in this issue. They recognize the fact that it is an almost impossible task to describe an odor, but that by the adoption of this advertising device, on which we have a patent pending, they can quickly familiarize the trade with the odor of any of their specialties.

G. H. Lowell & Co., New York, "Vanilla Specialists," have sent us their two latest booklets, "Important Points for the Manufacturers of Vanilla Extract" and "Cold Facts" concerning *Concreta* lemon and orange for flavorings.

We have received a very tastily printed booklet from Mr. Donald Wilson, manager United States branch Th. Mühlethaler Co., Nyon, Switzerland, and Grasse, France. It is devoted to *Nyo-Flower Oils*, each one of which is described, and prices are given.

Mr. Geo. F. Keller was elected president of the Sanital Chemical Laby Co., St. Louis, Mo., at the recent annual meeting. Mr. Herbert S. Gardner is vice-president, and Mr. Edward F. Helbig, of Meyer Bros. Drug Co., a director. The treasurer's report for the fiscal year ending Nov. 30, 1909, shows a valuation on trade mark, formulae, etc., of \$1,900,000. The capital stock outstanding is \$1,505,564.20.



FERDINAND B. BUEDINGEN.  
WILLIAM S. ADDISON.  
WILLIAM H. GREEN.

Back of every article is its maker, and whenever one has reason to admire a product there is always a desire to know "the man behind the gun." In the case of the handsome covers that adorn this journal we are happily able to give this pen sketch of the triumvirate responsible for the work of the Buedingen Box and Label Co., Rochester, N. Y., through our personal acquaintance with the gentlemen whose portraits we present, and by reason also of several visits to the company's plant.

Mr. Ferdinand B. Buedingen is yet a young man, as successful business men go, and has had 30 years' experience in box making. He was for a time identified with the Buedingen Mfg. Co., having helped to organize it, and for a number of years he was its manager. Several years ago he withdrew and organized the Commercial Paper Box Co., and in May, 1908, bought the interests of the late Carl Buedingen in the present

concern and assumed control of the company.

The lithograph department is under the management of

William S. Addison, a young man who is recognized by his peers as one of the best lithographers in the country. Our covers demonstrate his ability to such a sufficient degree that further comment is unnecessary.

The sales department is in the hands of William H. Green, who makes his headquarters at 395 Broadway, New York. He has had some five years experience in the box and label business and has a wide acquaintance with perfume and soap manufacturers. Good judges of character will draw their own conclusions from the accompanying cut.

The following cut is that of a corner in one of the floors



A CORNER IN THE LITHOGRAPH DEPARTMENT.

of the lithograph department showing transfer presses and drying racks. A part of the box department is shown in the following cut, and due to limits of space we are unable



IN THE BOX DEPARTMENT.

to present complete views of the plant. Suffice it to say that the equipment is complete and up to date, and designed to handle work expeditiously and well.

Owing to the growth of its business the Sheffield Dentriforce Co., New London, Conn., will erect a new plant as soon as the weather permits. The new building will be located on the site of the present plant in Waller street. It will be a three-story building constructed of iron and brick and will cover an area of 7,200 square feet, having a frontage of 120 feet and a depth of 60 feet. The structure will be modern in every particular and will be equipped with the latest and most approved styles of machinery

for the manufacture of the company's line of goods. The construction of the building will be started as soon as practicable, which will probably be about March 1.

In order that the company will not be compelled to suspend operations and meet the constantly increasing demands of its trade one-half of the building will be constructed first and completed as near as possible when enough of the machinery of the plant will be installed and the manufacturing of its goods to a certain extent may continue. Then the remaining portion of the old plant will be demolished and work started on the other half of the new building.

The present plant of the company comprises four buildings, three of which have been added to the original plant. These consist of the main building in which most of the dentrifice is manufactured. In the rear of this building is situated another and smaller building, which contains a large amount of machinery. On either side of the main building are located two other structures, one of which is used for the manufacture of paper boxes and the other as a storage building. The collapsible tubes are manufactured by the New England Collapsible Tube Co. in the main building. In addition to its increasing business, which has made it necessary for the company to expand, the company recently transferred The Sheffield Co., which was formerly located in New York, to New London.

The Success Filler, described in the advertisement of the Chas. L. Bastian Manufacturing Co., of Chicago, is a machine which gives its operator a double check on contents, as the flow of liquid through the four, six, eight or twelve tubes into the bottles underneath is naturally uniform, and on top of this the filling tubes are so arranged that they automatically shut off the flow of liquid as soon as the bottle in which the tube is inserted is filled to a certain height in the neck. Numerous other advantages are claimed, and in view of impending legislation, both national and State, designed to compel the accurate labeling of packages, as to contents, it would seem that manufacturers of flavoring extracts, toilet waters and similar specialties would do well to give this matter close attention.

Mr. Oscar E. Watts, Chicago, representative of Ungerer & Co., New York, is to be congratulated because of the arrival on Jan. 5 of twins—one a boy and the other a girl. (Watts plays no favorites). The boy has been favored with the name William Grenelle and the girl Viola Eugenia. Good luck to the happy family.

Fritzsche Brothers, New York, have announced that commencing Jan. 1 A. S. Barada, formerly with the Chicago office of Charles Pfizer & Co., will represent them in Kansas City and neighboring territory, succeeding O. A. Brown, who is no longer in the service of Fritzsche Brothers.

The A. Colburn Company, of Philadelphia, manufacturers of flavoring extracts, etc., last week gave a dinner to the members of their sales force at the Bellevue-Stratford Hotel. Ellsworth S. Hopper acted as toastmaster, and responses were made by William West, Charles D. Joyce, Arthur Malcolm, W. S. Hopkins, S. L. Posey, H. Bartlow and W. H. Laudenslager.

The Portsmouth Cotton Oil Refining Co., Syracuse, N. Y., has placed a contract for the erection of an addition to its soap factory, to cost \$4,500.

Mr. Robert Ewald, of the firm of Jeancard Fils & Co., Cannes, France, is celebrating the arrival of a daughter.

P. R. Dreyer, of Ungerer & Co.'s sales staff, returned recently from a two months' trip to the middle West. He appears to be justifiably optimistic over results and prospects.

Messrs. L. A. Van Dyk and S. Iserman, of Van Dyk & Co., New York, have sailed for the West Indies. They seem to have developed a great liking for outdoor sports and expect to have a good time chasing, or rather, shooting ducks on the Isle of Pines.

Mr. J. S. Richmond, of Van Dyk & Co., will leave on a semi-annual Western and Southern trip about the 23rd.

In this issue we publish the advertisement of The Kari Kiefer Machine Co., of Cincinnati, manufacturers of filters, filling machines and electric rotary pumps. They specialize in their line, making special machines that are adapted for special purposes. When our representative visited their factory recently, he saw filling machines of all sizes, at all prices, that would fill practically every article that it is desired to bottle or can, and filters of every known description and all sizes from a small laboratory filter to the largest wine filter, which sells at \$2,500. They manufacture a rotary pump with a capacity of two to five gallons per minute, and from this size up to a pump with a capacity of 100 gallons per minute. Still larger sizes are built if desired. They furnish filters in iron, bronze or wood. Where the use of chemicals necessitates a special finishing of the machine, they will gold, silver or tin plate them, or use wax or paraffin as the circumstances may require. "A Suggestion Department" is conducted under Mr. Kiefer's personal direction. This department welcomes inquiries from manufacturers who may not know just what they require, and just how to arrange their machines to operate at a minimum expense. They are able to offer advice and suggestions that prove of great value, oftentimes, to the manufacturer. This department makes no charge for its services.

The Dodge & Olcott Co., New York, has announced the establishment of a branch office at 20 Mark Lane, London, E. C., in charge of Frank T. Dodge.

The National Aniline & Chemical Co., New York, are calling attention, in their advertisement, to *guaranteed* and *certified* food colors.

#### NEW INCORPORATIONS.

The Olds Soap & Chemical Co., Indianapolis, Ind.; capital, \$15,000.—Ellsworth Coffyn, C. E. Sheets and I. S. Roberts.

The Star Products Company has been chartered under the laws of Delaware to engage in the manufacture of washing compounds, soaps, and powders. The incorporators are: William H. Green and Levi A. Thompson, of Baltimore, and Alfred V. L. Esperance, of New York City. The capital is \$1,000,000.



The Nutrea Company, New York, incorporated to manufacture toilet preparations, etc.; capital, \$100,000. Incorporators: C. J. Manning, H. S. Manning, E. A. Darby, Buffalo.

The Burckhardt Company, Cincinnati, Ohio; capital, \$600,000. The new corporation will take over the soap and oil interests of Burckhardt & Co. H. W. Burckhardt will be the president.

The Cohocton Soap Company, Cohocton, Ohio; capital, \$1,200. The incorporators are: Floyd L. Spaulding, Fred J. Land and James C. Cuff, all of Cohocton.

Bon Ami Co., New York; soaps and toilet articles; capital, \$5,000,000.

The Oxford Soap Co., Manchester, Conn.; capital, \$100,000; to begin business with \$1,000; incorporators, Ralph L. Kelly, Clifford K. Pullen and Francis C. Nickerson, all of New York.

Rochester Boiler Compound Company, Rochester, N. Y.; soap powders, etc.; capital, \$25,000; directors, Charles W. Bly, of Pittsburg; Jay K. Smith, of Honeoye Falls; Charles W. Howard, of Brockport; Alvin Block, of Rochester, and Fred C. Hovey, of Brockport.

### PURE FOOD AND DRUG NOTES.

In this section will be found all matters of interest contained in FEDERAL and STATE official reports, newspaper items, etc., relating to perfumes, flavoring extracts, etc.

#### FEDERAL.

Notice of Judgment No. 122.

#### Adulteration and Misbranding of Strawberry Extract. (An Imitation Colored with a Coal-Tar Dye.)

In accordance with the provisions of section 4 of the Food and Drugs Act of June 30, 1906, and of regulation 6 of the rules and regulations for the enforcement of the act, notice is given that on the 15th day of June, 1909 in the district court of the United States for the eastern district of Louisiana, in a prosecution against King Brothers, Shilstone & Saint (Limited), a corporation of New Orleans, La., for violation of section 2 of the aforesaid act in shipping and delivering for shipment an adulterated and misbranded strawberry flavoring extract, the said King Brothers, Shilstone & Saint (Limited), having entered a plea of guilty, the court imposed upon it a fine of \$10.

The facts in the case were as follows:

On or about April 6, 1908, an inspector of the United States Department of Agriculture purchased from R. Tum-inello, Magnolia, Miss., a sample of strawberry extract labeled "Crown Extract of Strawberry. Prepared by Phoenix Extract Company, New Orleans, La." which had been manufactured and shipped by King Brothers, Shilstone & Saint (Limited), New Orleans, La., to the said dealer on or about October 18, 1907. The sample was subjected to analysis in the Bureau of Chemistry, United

States Department of Agriculture, and the following results obtained and stated:

Specific gravity (15.5° C).....	0.9952
Solids (grams per 100 cc.).....	3.79
Alcohol, by volume (per cent).....	15.52
Esters, as amyl acetate (per cent).....	.86
Color .....	Coal-tar dye.

It was evident that the product was both adulterated and misbranded within the meaning of sections 7 and 8 of the act; adulterated because it was not made from the strawberry fruit, but was an article artificially made and colored in imitation of strawberry extract; and misbranded because labeled "Extract of Strawberry," whereas it was an imitation of the genuine strawberry extract and was offered for sale and sold under the distinctive name of the genuine article.

The Secretary of Agriculture having, on October 18, 1908, afforded the manufacturers an opportunity to show any fault or error in the aforesaid analysis, and they having failed to do so, the facts were reported to the United States attorney for the eastern district of Louisiana, who filed an information against King Brothers, Shilstone & Saint (Limited), with the result hereinbefore stated.

H. W. WILEY,  
F. L. DUNLAP,  
GEO. P. McCABE,

Board of Food and Drug Inspection.

Approved:

JAMES WILSON, Secretary of Agriculture.  
WASHINGTON, D. C. Nov. 27, 1909.

#### STATE.

CALIFORNIA.—Monthly Bulletin, Nov. 1909, State Board of Health. Mr. J. E. Gardner, attorney for the State Board of Health, has prepared the following statement with reference to guaranties, and the data will repay careful study by all dealers and others interested in the operation of the Pure Food and Drug Laws:

#### CONCERNING GUARANTIES.

Since there seems to be some confusion in the minds of manufacturers and dealers as to the matter of guaranties, it has been deemed wise to issue a statement in detail, which, it is hoped, will make the matter too plain for misunderstanding. In addition to this statement, persons interested are urged carefully to read the provisions of the acts and the regulations.

Guaranties, under the California Foods and Drugs Act, are of two kinds, general and specific.

1. The general guaranty must be filed with the Secretary of Agriculture, in Washington, D. C. It must refer to the California law and must be in the following form:

"I (we), the undersigned, do hereby guarantee that the articles of foods, liquors, and drugs, manufactured, produced, prepared, compounded, packed, distributed, or sold by me (us) (specifying the same as fully as possible), are not adulterated or misbranded within the meaning of the Food and Drugs Act, June 30, 1906, and are not adulterated, mislabeled, or misbranded, within the meaning of the California Pure Foods Act, March 11, 1907, or the California Pure Drugs Act, March 11, 1907.

Dated, .....

(Signed in ink).....

(Name, place of business and address of the guarantor, and statement as to whether guarantor is corporation or copartnership.)"

The general guaranty must be acknowledged before a notary public and, where the guarantor is a corporation, must be accompanied by evidence of the authority of the person executing the guaranty, as agent or officer. Unless these requirements are complied with, the guaranty will not be filed.

The general guaranty will afford protection only as to packages bearing on the label the legend "Guaranteed by

(name of guarantor) under the Food and Drugs Act, June 30, 1906," and the serial number given by the Secretary of Agriculture.

2. The *specific guaranty* must contain the name and address of the guarantor, an *itemized statement of the articles purchased*, and a statement that they are not misbranded, mislabeled or adulterated within the meaning of the California law. It must be in substantially the following form:

"The undersigned hereby guarantees that the articles of (drugs, foods, or liquors, as the case may be, specifying them), this day sold to (name of dealer) and mentioned in the attached invoice, are not adulterated, misbranded, or mislabeled, within the meaning of the California Pure Foods (or Drugs, as the case may be) Act, March 11, 1907.

Dated .....

(Name, place of business and address of the guarantor, and statement as to whether guarantor is corporation or copartnership.)"

A convenient method of using the specific guaranty, which has been adopted by many manufacturers and wholesalers is to print or stamp the form on all invoices, and sign such invoices as they go out.

A convenient form for use in this manner is the following:

"The articles of foods (or drugs, as the case may be) listed in this invoice are guaranteed not to be adulterated, mislabeled or misbranded, within the meaning of the California Pure Foods (or Drugs, as the case may be) Act, March 11, 1907.

(Name and address of guarantor with statement as to whether guarantor is corporation, partnership or individual.)"

*The general guaranty is worthless unless it is filed with the Secretary of Agriculture. Given by the guarantor to the purchaser it affords no protection, for the reason that the act makes no provision for the prosecution of the guarantor in such a case.*

Excepting as to goods covered by general guaranty, filed in Washington and bearing label with the legend and serial number, the purchaser will not be protected unless he has specific guaranty as above indicated, containing an itemized statement of the articles guaranteed.

Dealers from whom adulterated or misbranded goods are taken by inspectors, in order to protect themselves, must prove that the sample was guaranteed as required by the act. Such proof must be submitted to the State Board of Health at the hearing, or the case will be referred for prosecution. Where the guaranty is specific, it should be submitted, with a statement under oath that the sample taken is one of the articles mentioned in the itemized statement, and that the sample when taken was in exactly the same condition as when received by the dealer. Where the guaranty is general, a copy of the general guaranty on file with the Secretary of Agriculture, duly certified by him as correct, and a statement under oath that the sample when taken was in exactly the same condition as it was when received by the dealer should be submitted.

#### SPECIAL ANNOUNCEMENT.

Since the foregoing went to print a committee representing the wholesale grocers of the State has met with the Board and submitted the following suggestion:

That where desired the guarantor shall furnish to his customer a *general guaranty* covering all articles which may be sold to him, together with an agreement to the effect that a *specific guaranty*, covering any particular article or articles purchased from the guarantor, will be furnished to the customer upon demand. This arrangement contemplates that whenever a sample of goods pur-

chased from the guarantor shall be taken up by an inspector, the dealer shall state the name of the guarantor, and shall at once demand of the latter the specific guaranty to be used for the dealer's protection in case he is cited to appear before the State Board of Health for any violation discovered upon examination of the sample.

The Board has no objection to this plan, but it must be borne in mind that to afford himself any protection, the dealer must produce the specific guaranty at the hearing, must prove that the article described therein is the identical article taken as a sample, and that the sample when taken was in the same condition, as to label and ingredients, as it was when purchased from the guarantor. Under these circumstances, the specific guaranty may be given at any time before the hearing.

ILLINOIS.—On December 6, 1909, Governor Deneen appointed as members of the State Food Standard Commission, Mr. Charles E. M. Newton as "a representative of the Illinois food manufacturing industries" and Dr. Walter S. Haines as "an expert food chemist of known reputation," according to the requirements of the Illinois Food Law. These two gentlemen, with Mr. A. H. Jones, State Food Commissioner, constitute the State Food Standard Commission.

The Commission has organized with Mr. A. H. Jones as chairman and Dr. T. J. Bryan, 1620 Manhattan Building, Chicago, as corresponding and recording secretary. Among the early subjects to be considered will be ice cream and condensed and evaporated milk.

The Commission will not make a standard without fully investigating both the scientific data with reference to the products and trade conditions and customs relating thereto. The Commission requests all interested to submit briefs in triplicate to the secretary of the Commission at as early a date as possible. After these briefs have been received and considered, a public hearing will then be given to those interested that they may present evidence and arguments with reference thereto.

A humorous situation was brought to light recently by the arrest of a gang of Italian counterfeiters that have been operating in the larger cities of the East. The bills were printed in Palermo, Sicily, and shipped here in olive oil cans consigned to a wholesale grocer in New York. The funny part of it is that the "importers" paid "duty" on the bills as "olive oil," and judging by the ephemeral success of the gang in disposing of them, the "value" assigned by the customs officials on this "oil" must have been strictly in accordance with the U. S. P. test for pure olive oil. Our officials are to be commended for the painstaking way in which our tariff laws are administered.

#### TRADE MARKS FOR REGISTRATION IN OUR BUREAU.

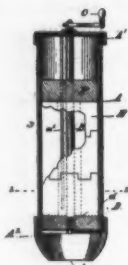
We have been petitioned to register the following trade mark. Any of our readers that have good reason to protest against the issuance of our Certificate of Registration under the common law should communicate with us before Feb. 21, 1910.

The registration of trade marks in our bureau will serve to establish the priority of the use of such trade marks in actual commerce by the applicant.

Serial No. 7.—Thos. Gill Soap Co., Brooklyn, N. Y. (Filed Dec. 28, 1909.) For soap:

# NUTRO

## PATENTS AND TRADE MARKS



945495

**Rexall**

38796



43008

**HAVANETA**

39198

**PYRAMID**  
BRAND


39417



41539


**COLIBRI**

43431



43009

44255

**ONOPO**

44876



44548

**PARLOR CITY**

44895



45177

**LINOSOAP**

45421

**VAROMA**

45958

**A.B.C.**

45006

**CONCEIT**

46026

**"IDEAL"**

45202

**Blossom Drops**

45564

**REDOX**

45720

**MOGUL**

45797

## NOTE TO READERS.

This department is conducted under the general supervision of Samuel E. Darby, Esq., Patent and Trade Mark Attorney, 220 Broadway, New York, formerly Chief Clerk and Examiner, U. S. Patent Office. This report of patents, trade marks, labels and designs is compiled from the official records of the Patent Office in Washington, D. C. We include everything relating to the four co-ordinate branches of the essential oil industry, viz.: PERFUMES, SOAP, FLAVORING EXTRACTS and TOILET PREPARATIONS.

The trade marks illustrated are described under the heading "Trade Marks Applied For," and are those for which registration has been *allowed*, but not yet *issued*. All protests for infringement, etc., should be made promptly to the Commissioner of Patents, Washington, D. C.

All inquiries relating to patents, trade marks, labels, copyrights, etc., will receive Mr. Darby's attention if addressed to

PATENT AND TRADE MARK DEPT.,  
Perfumer Pub. Co. 100 William St., New York.

## PATENTS GRANTED.

945,495.—CAKE OF SOAP.—Charles H. J. Dilg and Jonathan O. Fowler, New York, N. Y. Filed Feb. 20, 1907. Serial No. 358,412.

Claim.—A cake of soap adapted for use in a machine to disintegrate soap by the action of a cutter and having one end thereof adapted, without deformation, detachably to interlock with an end of a second cake, and formed with a central opening therein to afford a means to engage a device to prevent the cake and cutter from rotating in unison during the process of cutting.

## TRADE MARKS REGISTERED.

76,157.—Flavoring Extracts of Lemon, Vanilla, and Peppermint.—C. F. Sauer, Richmond, Va.

Filed May 21, 1909. Serial No. 42,591. Published October 19, 1909.

76,164.—Soap.—William C. Hathaway, Plymouth, Mass. Filed August 21, 1909. Serial No. 44,270. Published October 19, 1909.

76,176.—Toilet Emollients.—Coralene Curative Company, Boston, Mass.

Filed March 5, 1909. Serial No. 40,936. Published October 19, 1909.

76,253.—Liquid Dentifrice, Dental Powder, Cream, and Paste.—F. August Luyties, St. Louis, Mo.

Filed December 11, 1907. Serial No. 31,673. Published January 28, 1908.

76,255.—Foot-Powder.—Richard J. Moore, New York, N. Y.

Filed March 16, 1909. Serial No. 41,216. Published October 26, 1909.

76,256.—Hair Tonic.—Niagara Chemical Company, Buffalo, N. Y.

Filed May 8, 1909. Serial No. 42,314. Published October 26, 1909.

76,267.—Compound of Oleostearin and Cottonseed Oil.—Armstrong Packing Company, Dallas, Tex.

Filed August 13, 1909. Serial No. 44,130. Published November 2, 1909.

76,289.—Hair Restorer.—Michael O'Hegan, Butte, Mont. Filed February 1, 1909. Serial No. 40,282. Published November 2, 1909.



76,304.—Washing Compound.—Rub-A-Lac Manufacturing Company, Glouster and Marietta, Ohio.

Filed March 22, 1909. Serial No. 41,340. Published November 2, 1909.

76,305.—Liquid Compound for Treating the Scalp and Hair.—William J. Scherer, Rochester, N. Y.

Filed August 21, 1909. Serial No. 44,271. Published October 19, 1909.

76,388.—Soap Powder.—The Arabol Manufacturing Company, New York, N. Y.

Filed July 22, 1909. Serial No. 43,688. Published November 9, 1909.

76,415.—Neat's Foot Oil Soap for Tanners' Use.—F. S. Walton Company, Camden, N. J., and Philadelphia, Pa.

Filed July 21, 1909. Serial No. 43,670. Published October 26, 1909.

76,416.—Hair Tonics.—The M. A. Liotta Chemical Company, New York, N. Y.

Filed March 3, 1909. Serial No. 40,926. Published November 9, 1909.

#### TRADE MARKS APPLIED FOR.

38,796.—United Drug Co., Boston, Mass. Filed November 20, 1908.—Antiseptics, Tooth Powders, Pastes and Washes, Hair Tonics, Shampoos, Emollients, Shaving Lotions, Tan and Freckle Lotion, Cream of Almonds, Talcum Powder, Rose Water and Glycerine, and pharmaceutical preparations.

39,198.—H. Bronnley & Co., Bath, Me. Filed Dec. 18, 1908.—Flavoring Extracts, etc.

41,539.—Mrs. Nettie Harrison Co., San Francisco, Cal. Filed April 1, 1909. (Used Ten Years.) Showing a Portrait of Mrs. Nettie Harrison.—Face Powders and Creams, Face Bleaches, Toilet Waters, Liquid and Powder Dentifrices, Hair Tonics and Hair Dyes, Hair Removers, Blood Purifiers, Skin Remedies, Headache Remedies, and Talcum Powder.

43,068.—Ameen F. Haddad, New York, N. Y. Filed June 14, 1909. (The portrait being that of Midhat Pasha, deceased.)—Perfumery, Face Powder, Toilet Water, and Toilet Cream.

43,009.—Ameen F. Haddad, New York, N. Y. Filed June 14, 1909.—Perfumery.

43,047.—Underwood & Carroll, Gardner, Mass. Filed June 16, 1909.—A Tooth Powder.

43,431.—Geo. Borgfeldt & Co., New York, N. Y. Filed July 8, 1909.—Perfumery.

44,255.—J. F. Humphreys & Co., Bloomington, Ills. Filed August 20, 1909.—Flavoring Extracts, etc.

44,548.—The Rexine Co., Sheboygan, Wis. Filed September 4, 1909. (The arc figures of said mark being red.)

—A Semiliquid Soap.

44,876.—The S. C. Smith Co., Cleveland, Ohio. Filed September 23, 1909.—Flavoring Extracts, etc.

44,895.—Witwer Brothers Co., Cedar Rapids, Iowa. Filed September 23, 1909.—Flavoring Extracts, etc.

45,006.—Allen Brothers Co., Omaha, Neb. Filed Sept. 29, 1909.—Flavoring Extracts.

45,177.—La France Mfg. Co., Philadelphia, Pa. Filed October 7, 1909.—Laundry Soaps.

45,202.—Louisville Cotton Oil Co., Louisville, Ky. Filed October 9, 1909.—Cotton-seed Oil.

45,421.—H. Fischer & Co., Cincinnati, Ohio. Filed October 20, 1909.—Soap.

45,564.—Geo. Borgfeldt & Co., New York, N. Y. Filed October 26, 1909.—Perfumery.

45,720.—Edwin Cudlipp, New York, N. Y. Filed November 5, 1909.—Dental Creams.

45,797.—The Hunnewell Soap Co., Cincinnati, Ohio. Filed November 10, 1909.—Soaps and Cleansing Powders.

45,958.—Schuhmacher Grocer Co., La Grange, Tex. Filed November 18, 1909.—Flavoring Extracts, etc.

46,026.—The C. B. Woodworth Sons Co., Rochester, N. Y. Filed November 20, 1909.—Perfumes, Toilet Waters, Face Powders and Sachet-Powders.

#### WHAT DO OUR FRIENDS IN THE "DRY" STATES SAY TO THIS?



"IT'S RUMORED THAT 'PERFUMERS' ARE DOING WELL IN 'DRY' DISTRICTS."—Judge.

## FOREIGN CORRESPONDENCE AND MARKET REPORT

### ENGLAND.

Consul Walter C. Hamm, at Hull, England, writes that it is reported that there are projects on foot in connection with the soya-bean industry which may have far-reaching effects both on the industry in Hull and on the Pacific coast of America.

As stated, one scheme is to erect large seed-crushing mills at Vancouver, British Columbia, and Seattle, State of Washington, where the bean can be crushed and the oil extracted. The Canadian Pacific and lines of steamers running from Vancouver and Seattle to Japan and China are said to be aiding this scheme.

### FRANCE.

GRASSE.—The Society of Agriculture recently held its annual meeting. After a communication to the assembly of the appeal of the National Syndicate for the defence of the culture of oil, because of the Congress of Olive Culture assembled on that day at Nice, Mr. Auguste Merle, the devoted president, referred to the interest which the questions of fraud and of tariff revisions which form the order of the day for the congress, have for the producers of and the dealers in olive oil, and he showed the necessity of energetic, united action in order to obtain the just claims of olive culture and of the commerce in olive oil. As a result of that agitation it was decided that the Society of Agriculture should be represented at the Congress by a delegation composed of the president, a vice-president, the secretary and three other members of the Council of Administration, independently, of course, of the members who might wish to take part in the manifestation and whose number it was hoped would be large.

The assembly also decided to take steps to induce the manufacturers of oil and the dealers in it in Grasse to participate in the congress or to procure their adherence to the measures which will be proposed there.

The meeting then gave its attention to the regulation of various questions of internal management and announced three new admissions, Messrs. Guichard, a perfumer; and Bombard, an architect, and M. J. Opio.

### ITALY.

Consul-General James A. Smith, of Genoa, reviews the olive-oil trade of Italy and the prospects for the present olive crop:

The 1908-9 crop of olives in Italy was, in many sections, a complete failure, in others a partial one, and the general result was a gathering of from one-third to one-fifth the normal crop. The effect of this shortage has been plainly evident during 1909 in the extraordinarily high prices at which prime quality oil has been held and in the showing made by the foreign trade in olive as well as other oils which are adopted as substitutes in time of scarcity of the genuine article. Up to the end of September exports of olive oil had diminished by more than one-half from the corresponding period of the previous year. In 1908 they were \$8,942,000, in 1909 only \$4,250,000.

Imports of foreign olive oils brought in for blending with the local product rose from the value of \$206,000 in 1908 to \$980,000 during the same period of the past year; but the most notable feature observed as an effect of the short crop of olives has been the heavy increase in the Italian imports of cotton-seed oil, practically all of which comes from the United States. From a value of \$636,000 during the first nine months of 1908 the importations in the same period of 1909 reached \$3,728,000. The larger part of this has probably been consumed by the poorer classes unable to pay the exceptionally high price asked for even a poor grade of olive oil.

### DISTRICT REPORTS—OIL CRUSHING.

Reports from every olive-growing section in Italy give only a fair outlook for the 1909-10 crop. In the Department of Liguria it has been effected by the long drought, and only one-third a normal crop is predicted; in Romagna only a minimum crop is promised; in Tuscany about two-thirds the normal amount; the Marches and Umbria and the Department of Lazio will probably yield about one-half the normal quantity; in Calabria a two-thirds crop is counted upon; in Sicily and Sardinia prospects are favorable for a normal crop; and in the important oil-producing region around Bari the outlook is for an abundant yield.

From what we have been able to gather from the various reports it is believed that the olive crop throughout Italy will amount to about two-thirds of the quantity produced in an average year. Everywhere, however, the quality is said to be exceptionally good.

It is probable there will no radical change in the prevailing high prices of olive oil, and American importers can look for little, if any, lowering of cost during the coming year. On the other hand, the demand for American cotton-seed oil will continue to be a large one. The Italian oil mills are, however, largely increasing their purchases of oleous seeds, and much of the oil produced therefrom is used for alimentary purposes in competition with cotton-seed oil.

### NATAL.

Messrs. Lever Bros., soap manufacturers, will shortly set up a soap-factory at Durban, in preference to their original intention of establishing the business in Cape Colony, where a site had been purchased at Salt River, near Cape Town. The superior advantage of Durban over Cape Town as a port is understood to be the reason for the change of site. The factory is to cope with the whole of the requirements of Messrs. Lever Bros.' preparations in South Africa, and also act as a center for the markets of the East.

### THE DOMESTIC MARKET.

Those oils which are consumed in the largest quantity are always the ones that are of prime importance in the market. Oil Geranium African is of considerable consequence to toilet soap makers, and in view of the situation it will therefore be of interest.

For the last few years the price of this oil has been gradually decreasing because of over production, not only the African but the Reunion oil as well. Several large

houses had long-term contracts with the growers and those shippers not so situated had to buy in the open market. As a consequence contracts were made at high figures, and in view of the fact that many of these contracts expired while the oil was selling at \$3 per pound or lower, many of the growers stopped cultivating geranium as there was little profit at the probable figures.

A continued rise in price of this oil can therefore be looked for and an adequate supply of African oil should not be expected before the market rises to a level that will enable the African growers to cultivate this flower with profit.

Reports from Bulgaria indicate that the market is almost bare of good oil, and price has risen in consequence. Locally 25 cents more per ounce is being asked for the first quality.

As stated in another column, there will be a hearing before the Board of General Appraisers on the classification of orange oil within the next few days, and the situation will remain in *statu quo* until the decision shall have been rendered.

The Messina oil market is becoming firmer, and a slight increase in price is due to the tariff on containers. Under the head of Treasury Decisions, we print a decision of the Secretary of the Treasury which will affect the containers for pomades and oils.

There is little new in regard to peppermint oil and the price remains about the same.

## BEANS.

The market is becoming fairly active, especially among dealers and importers. Mexican cuts are of principal interest, attention being directed to old stocks on account of pessimistic reports regarding quality of new goods.

The situation in regard to Bourbon beans is much the same as our last report, though said consumers buy more freely the price here may rise to the level of France. American quotations range from 36 to 40 francs per kilo.

## SOAP MATERIALS.

Tallow, city, .06 $\frac{3}{4}$  (hhds.); country, .06 $\frac{1}{4}$ .  
Grease, brown, .05 $\frac{3}{4}$ ; yellow, .06 $\frac{1}{4}$ .  
Cottonseed Oil, crude, tanks, 6.50@6.60; summer yellow, prime, 7 $\frac{1}{2}$ @7 $\frac{3}{4}$ .  
Cocoanut Oil, Cochín, .09 $\frac{3}{4}$ @10; Ceylon, .09@.09 $\frac{1}{4}$ .  
Olive Oil, in bond, .80@.90.  
Olive Oil, Foots, prime, .07.  
Palm Oil, Lagos, .06 $\frac{3}{4}$ ; red, prime, .06 $\frac{1}{4}$ .  
Soya Bean Oil, .06 $\frac{1}{2}$ @.06 $\frac{3}{4}$ .  
Chemicals, borax, .04 $\frac{1}{2}$ ; caustic soda, 80 p. c. basis of 60 p. c., \$1.90.  
Rosin, per 280 lbs., 4.35@7.15.

Almond, Bitter.....per lb.	\$3.50	Geranium, Turkish .....	\$2.50	Savin .....	\$1.40
" " F. F. P. A.....	4.50	Ginger .....	4.50	Spearmint .....	1.90
" Artificial .....	.75	Gingergrass .....	1.35	Spruce .....	.45
" Sweet, True.....	.55-.60	Hemlock .....	.55	Tansy .....	3.50
" Peach-kernel .....	.30-.35	Juniper Beries, twice rect....	1.30	Thyme, red, French.....	1.10
Amber, Crude .....	.13	Kananga, Java .....	4.00	" white, " .....	1.30
" Rectified .....	.20	Lavender, English .....	7.00	Vetivert, Bourbon .....	8.50
Anise .....	1.15	" Cultivated .....	2.75	" Indian .....	42.00
Aspic (Spike) .....	1.35	" Fleurs, 28-30% .....	2.50	Wintergreen, artificial .....	.38
Bay, Porto Rico.....	3.50	Lemon .....	.85	" genuine .....	4.25
Bay .....	2.10	Lemongrass .....	.85	Wormwood .....	5.00
Bergamot, 35%-36%.....	3.90	Limes, expressed .....	2.00	Ylang-ylang .....	50.00-65.00
Birch (Sweet) .....	1.80	" distilled .....	.80		
Bois de Rose, Femelle.....	4.50	Linaloe .....	2.90	BEANS.	
Cade .....	.20	Mace, distilled .....	.80	Tonka Beans, Angostura ....	1.25
Cajeput .....	.60	Mustard, natural .....	4.10	Surinam .....	.55
Camphor .....	.12	" seed, gen .....	8.50	Vanilla Beans, Mexican .....	4.00-5.00
Caraway Seed .....	1.30	" artificial .....	2.00	" " Cut..	3.00
Cardamon .....	18.00	Myrbane, rect. ....	.12	" " Bourbon .....	3.75
Carvol .....	2.45	Neroli, petale .....	80.00-90.00	" " Tahiti .....	1.00
Cassia, 75-80%, Technical.....	1.00	" artificial .....	17.00	SUNDRIES.	
" Lead free .....	1.30	Nutmeg .....	.90	Ambergris, black .....	(oz.) 20.00
" Redistilled .....	1.60	Orange, bitter .....	2.40	" gray .....	25.00
Cedar, Leaf .....	.50	" sweet, .....	2.30	Civet, horns .....	1.75-1.85
" Wood .....	.25	Origanum .....	.40	Cologne Spirit .....	2.64-3.25
Cinnamon, Ceylon .....	6.50-12.00	Orris Root, concrete.... (oz.)	3.50-4.50	Heliotropine ..	1.85
Citronella .....	.28	" absolute .....	28.50-32.00	Musk, Cab, pods .....	(oz.) 8.00
Cloves .....	.80	Patchouly .....	4.75-5.50	" " grain .....	15.00
Copaiba .....	1.25	Pennyroyal .....	2.00	" Tonquin, pods... "	18.00
Coriander .....	6.00-13.00	Peppermint, W. C. ....	2.15	" " grain .... "	22.00
Croton .....	.75	Petit Grain, American.....	4.50	" Artificial, per lb. ....	1.50
Cubebs .....	3.10	" French .....	6.00	Orris Root, Florentine, whole..	.10
Erigeron .....	1.70	Pimento .....	2.25	Orris Root, powdered and	
Eucalyptus, Australian, 70%...	.50	Rose .....	(oz.) 5.00-5.50	granulated .....	.13
" American .....	.60	Rosemary, French .....	.80	Talc, Italian .....	.01 $\frac{1}{2}$ -.01 $\frac{3}{4}$
Fennel, Sweet .....	1.40	" Trieste .....	.70	Terpineol .....	.35-.45
" Bitter .....	.75	Safrol .....	.50	Thymol .....	1.85
Geranium, African .....	4.00	Sandalwood, East India.....	3.50	Vanillin .....	(oz.) .33-.35
" Bourbon .....	3.50	Sassafras, artificial .....	.35		
" French .....	11.00	" natural .....	.70		



(Continued from page 215.)

or is it not more probable that such traces are due to the normal composition of a given season's oil of lemon?

Passing on to the test upon which Mr. Chace has solely relied for his strong criticisms on this Sicilian lemon oil, we find on p. 9 of the report a statement that the deductions have been drawn by a microscopic examination of the crystals of nitroso-chlorides of the hydrocarbons contained in the first 10 per cent. distilled. It is stated that if present pinene nitroso-chloride is easily detected by its comparatively broad crystals, having irregular pyramidal ends, limonene nitroso-chloride crystals being in needle shapes or columns. If this test be the only one upon which the general deductions made by the American Government are based, it obviously must be looked upon with some suspicion, as the presence of any material quantity of pinene would be detected by far less delicate tests. In that test it has been assumed that the nitroso-chloride of limonene forms crystals different perhaps in size, but identical in crystalline form.

It is important in regard to this test that the papers of Wallach (*Ann. Chem.*, 252, 106, 270, 174) should be consulted. It will there be seen that limonene yields two isomeric nitroso-chlorides. The description contained in these papers shows that the nitroso-chloride, produced when limonene is treated substantially in the manner described by Chace, contains about 80 per cent. of the alpha and 20 per cent. of the beta variety. It is stated that alpha-limonene-nitroso-chloride separates in monoclinic crystals, together with holohedral forms; hemimorphic crystals are always found, which, in the case of the dextrolimonene derivative, have the clinodome on the left, while those of the laevo compound have the clinodome on the right. This fact appears to have been lost sight of by Chace, and one cannot help feeling that so delicate a test, if it be accurate (which, in my opinion, requires considerable confirmation), can hardly be safely applied to commercial samples of lemon oil. To emphasize the care which must be exercised in receiving this report, one may draw attention to the fact that the whole of the citral determinations were made by a fuchsin chlorometric method, which is certainly today discredited, and for which an apology is made in the report by the use of the words, "which at the time of making the analysis was the most accurate method available. . . ."

It appears to me that the American Department, in publishing the present report, have taken a step the gravity of which they have failed to appreciate. The lemon-oil industry, apart from glaring cases of gross adulteration, is in the hands of some of the best-known Sicilians and Englishmen of the highest repute, and it is men of this stamp who have not only shipped the parcels of oil to the United States which have been complained of, but who have had under their personal observation the whole of the industry for many years past. They have been responsible for authentic samples, which have been examined by chemists accustomed to deal with this oil on a very large scale, and have never yet been called into question, with regard to the quality of the oil usually shipped from the island, while on the strength of a microscopic test capable of detecting the minutest traces of pinene one is now asked to believe that gross frauds have been perpetrated on the American importers.

I think the above remarks really go to show that the presence of traces of pinene is, in fact, normal to pure oil of lemon, and can in no sense be regarded as evidence of

adulteration when found in the minute traces suggested by the present report; and that if the American authorities persist in maintaining the arbitrary standard which they have set up by this microscopic test, it may in some seasons render impossible the exportation of pure oil of lemon to the United States of America.

[The report of Messrs. Schimmel & Co. (received since Mr. Parry read the proof of this article) contains an account of a research on the terpenes of lemon oil. It is stated therein that "pinene occurs in the oil both in the active and the inactive form, l-a-pinene forming by far the greater part. The last-named substance was traced by oxidation into an active pinonic acid.]

SIR:—I am somewhat surprised that Mr. Parry should comment in such a controversy about which he has been obviously so poorly informed. The tests which we relied upon in condemning the lots of lemon oil at the New York Custom House in 1907 had solely to do with the presence of unusual amounts of pinene. This Bureau has now been constantly examining lemon oils for several years, and was well aware at the time of the trouble in 1907 that the distillation test as given in the Pharmacopœia should not be relied upon. Considerable experience with oils had shown us that by ordinary means of distillation, as prescribed by Schimmel & Co. in their "Berichte," pinene could not be found in the distillate by formation of the nitroso-chloride crystals and their examination under the microscope. A fact not mentioned in the circular, tending also to prove that the oils in question had been manipulated, is that since the exclusion of those oils, with one exception, no lots have been submitted for importation in which pinene could be detected. The Bureau has been spending considerable time in perfecting methods for the detection of added lemon terpenes, and believes that it is now in a position to exclude importations adulterated in this manner. It is thoroughly prepared and intends to fully examine the oils from the coming crop.

Yours respectfully, H. W. WILEY,  
Chief, Bureau of Chemistry,  
U. S. Department of Agriculture.

Washington, Nov. 27.

To the Editor of THE AMERICAN PERFUMER AND ESSENTIAL OIL REVIEW.

Sir: The recent publications of the Bureau of Agriculture in connection with the purity of lemon oil would naturally lead one to believe that the most critical attention had been paid to the matter by those closely interested in the subject in the United States.

I have before me that very excellent work, "Food Inspection and Analysis," by Albert E. Leach, chief of the Denver Food and Drug Inspection Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, and having carefully perused the same am at considerable loss to understand the following statements therein contained:

On pages 861-862 I read, "Oil of lemon . . . contains not less than 4 per cent. by weight of citral."

On pages 871-872 I read, "Another important constituent of lemon oil is the aldehyde citral, present to the extent of from 7 to 10 per cent."

Further on page 871 in connection with the same subject I find the specific gravity of lemongrass oil at 15.6 degs. given as 0.9309; that of citronella oil as 0.9437; that of terpeneless lemongrass oil as 0.9232, and that of citral as 0.9296.

Every one of these figures is hopelessly inaccurate and totally impossible. Dr. Wiley has expressed surprise at my criticism of the deductions of the American official chemists in reference to their views on lemon oil. I venture to ask if criticism is not warranted on such statements as the above.

London, Dec. 31, 1909.

Yours truly,  
ERNEST J. PARRY.

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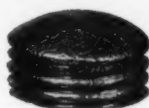
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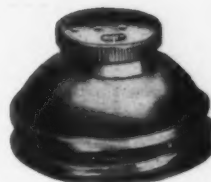
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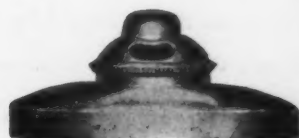
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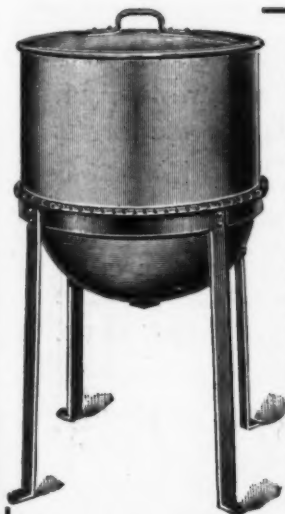
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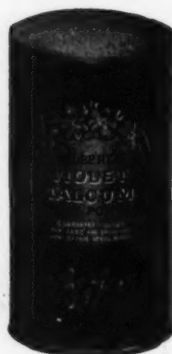
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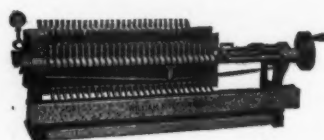
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**INDEX TO ADVERTISEMENTS**

Allen & Sons, Ltd., Stafford.....	I	Magnus, Mabce & Reynard .....	XXI
American Stopper Co. ....	Outside Back Cover and IV	Mansell, Hunt, Catty & Co., Ltd.....	XII
Arabol Mfg. Co. ....	II	Mehrländer, Dr., & Bergman.....	XXIII
Bagaroff & Fils, Ch. ....	Inside Front Cover	Méro & Boyveau (A. Sittler, successor).....	XXI
Barrett & Co., M. L. ....	XV	Mois Scientifique et Industriel, Le.....	XXIII
Bastian Mfg. Co., C. L. ....	V	Mühlethaler Co., Th.....	XIII
Bernard-Escoffier Fils .....	XVIII	National Aniline & Chem. Co.....	XXII
Bertrand Freres .....	I	New England Collapsible Tube Co.....	X
Bomezier, Carl .....	IX	Official Testing Laby.....	XVI
Brass Goods Mfg. Co. ....	XVII	Orozoff et Fils, Petko Iv.....	XI
Brown Paper Box Co., M. A.....	XI	Osaka Komamono Shoko Shimpo.....	XXIII
Buedingen Box & Label Co.....	Front Cover and VIII	Ottman Litho. Co., J.....	XXII
Burr, Edwin H. ....	X	Ozone-Vanillin Co. ....	XXIV
Bush & Co., Inc., W. J.....	XIV	Papaparglou & Co., Botu.....	X
Cailler & Co., Inc. ....	XI	Paper Canister Mfg. Co.....	XXIV
Carr-Lowry Glass Co.....	XVIII	Parke, Davis & Co.....	II
Chemical Works Flora .....	XI	Perrin & Co., Wm. R.....	XXVI
Chesapeake Glass Co.....	XII	Petteff & Co., V.....	XXVII
Chris, Antoine .....	XIII	Peterson Co., T. J. ....	XXIV
Chuit, Naef & Co.....	Inside Front Cover	Rachmann Bros. ....	XXVII
Clark Mfg. Co., J. L.....	XXV	Rockhill & Victor .....	Front Cover, I and XXVII
Consolidated Fruit Jar Co.....	Inside Front Cover	Roure-Bertrand Fils .....	X
Court, Bruno .....	II	Rowell Co., E. N. ....	XVIII
Crouch & Fitzgerald .....	XXIII	Sachse & Co., E.....	XXI
Daniels, W. B. ....	VI	Schimmel & Co.....	I
Deppe Söhne, Anton.....	—	Schmid, Julius .....	VI
Descollonges Frères & Augé.....	XXV	Schmitz & Co., Dr.....	VI
Doggett, Stanley .....	—	Shipkoff & Co. ....	II
Ducas Chem. Co. ....	XVIII	Sholes Co., C. E. ....	XXII
Dupont, Justin .....	X	Sicard, Pierre .....	XXI
Eckelhofer Bros. ....	XXIV	Sittler, A. ....	XXI
Euler, C. G. ....	XIII	Smith's Sons & Co., John E.....	XXVI
Evergreen Chem. Co. ....	XXIV	Standard Specialty & Tube Co.....	—
Fox & Sons, H. C.....	XV	Stemmler & Co., T. W.....	XI
Fritzsche Brothers .....	I	Stillwell & Co., Arthur A.....	Inside Front Cover
Givaudan, Leon .....	I	Swindell Bros .....	VI
Gross, Geo. E. ....	XVIII	Thurston & Braidich .....	XIII
Grossmith, T. H. ....	II and XXIII	Trageser Steam Copper Works, John.....	XXI
Heine & Co. ....	III	Ungerer & Co., Inside Front and Back Covers, I, X, XIV, XXI and XXIV	
Henderson Litho Co. ....	VII	Utica Aluminum & Novelty Works.....	IX
Imperial Metal Mfg. Co.....	IX	Van Dyk & Co. ....	Insert between XVIII and XIX, and XXVII
Innis, Spieden & Co.....	XV and XXIII	Webb & Son, Jas. A.....	XXVIII
Jeancard Fils & Co. ....	XIV	Whittaker, W. H. ....	II
Jordan & Co., Stanley .....	XV	Wilson, Donald .....	XIII
Kiefer Machine Co., The Karl.....	XII	Wirz, A. H. ....	VI
Lautier Fils .....	—	Zinkeisen & Co. ....	XXV
Lueders & Co., George.....	VI		



